DOCUMENT RESUME

ED 327 286 PS 019 238

AUTHOR	Kahn, David, Ed.
TITLE	Implementing Montessori Education in the Public Sector.
INSTITUTION	North American Montessori Teachers Association, Cleveland Heights, OH.
SPONS AGENCY	Cleveland Foundation, Ohio.; Nienhuis Group, Inc., Mountain View, CA.
PUB DATE	90
NOTE	620p.; Appended material, often using small type, photographs, or a pastel background, may not reproduce clearly.
AVAILABLE FROM	Montessori Public School Consortium, Cleveland State University, Rhodes Tower, Room 1319, E.22 Chester, Cleveland, OH 44115 ($35.00, plus $3.50 shipping and handling).
PUB TYPE	Guides - Non-Classroom Use (055) --
EDRS PRICE	MF03/PC25 Plus Postage.
DESCRIPTORS	Admission (School); *Early Childhood Education; Educational Development; Elementary Education; *Elementary School Curriculum; *Language Arts; *Montessori Method; Parent Participation; Preschool Education; Program Evaluation; Program Implementation; *Public Schools; Resource Materials; School Districts; *Special Education

ABSTRACT

This book on implementing Montessori education in the public sector begins with a historical and social overview that reveals the usefulness of Montessori pedagogy as a means of national public school reform. The second chapter discusses equipment needed for Montessori schools, the scope and sequence of curriculum used, and minimal expectations for what should be included in a Montessori classroom. Chapter Three provides a view of Montessori language arts in light of current trends, including bilingual education. Chapter Four outlines a number of implementation approaches. Chapter Five discusses ways to integrate different funding sources so that early childhood Montessori can be supported in school districts that usually do not provide prekindergarten services. Chapter Six concerns Montessori education in relation to the disabled child and special education. Chapter Seven discusses the process of starting a school in terms of development of a proposal, common misconceptions, magnet school funding, and task force development. Cost audits from two established Montessori schools in Cincinnati are included. Chapter Eight covers admissions and recruitment, nonselective admissions, magnet school recruitment, promotions, and admission application procedures. Chapter Nine concerns parent involvement; Chapter Ten, program expansion; and Chapter Eleven, program evaluation. Numerous references are cited throughout; supportive materials are appended to some chapters. (RH)

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☐ This document has been reproduced as received from the person or organization originating it.
☒ Minor changes have been made to improve reproduction quality.
● Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
David
Kahn
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

PS 019238

BEST COPY AVAILABLE

BEST COPY AVAILABLE

IMPLEMENTING MONTESSORI EDUCATION

IN THE PUBLIC SECTOR

Editor
David Kahn

Associate Editor
Jean Miller

Managing Editor
Joanne Bailis

PS 019038

All rights reserved by NAMTA © 1990

FOREWORD

Montessori in the public schools is a rapidly expanding phenomenon. Magnet school experts cite Montessori as the most offered choice in the "schools of choice" reform movement. Public school Montessori currently includes one hundred schools serving about 14,000 children with five to ten districts beginning new Montessori programs each year. Over half of the public school programs now in existence have been founded since 1980.

When we refer to "Montessori in the Public Sector," there is sometimes the implication that the public school Montessori pedagogical experience should be different from that of the private sector. Even though there is a range of practice in both the private and public sector — some conservative, some reformed, some piecemeal, some not defined at all — good Montessori education remains the same in any sector. No matter what language is chosen to describe Montessori, there is no substitute for visiting a good Montessori program for several days and observing children interact within a scientifically prepared environment and with adults who are trained and experienced in working in that prepared environment.

Montessorians responsible for Montessori implementation in the public sector must look at the physical, administrative, and psychological changes that precede curricular change. The district standards, desegregation, the office and school forms, the financials, and marketing are factors having little to do with Montessori pedagogy, but which need to be aligned with Montessori philosophy. Thus, this volume contains documents which, for the most part, do not capture Montessori in its philosophical essence, but which demonstrate how Montessori is represented in bureaucratic and research terms. These terms, in their reductionism, can diminish the subtle vision of Montessori. The sensitivity to the child, the spiritual and moral values of the Montessori philosophy, the intensity of the cosmic task, etc., have a vernacular and meaning which are essential to authentic Montessori but are to be distinguished from the reporting, testing, researching, and general idiom of modern public schools.

In some districts, Montessori expertise is not available. A good fifth of these existing schools do not have certified Montessori teachers. More than half do not have Montessori supervision. Two-thirds are starting children after age three. One-third show random or non-existent multi-age groupings. Montessori is at greatest risk during its implementation stage, when knowledge of the method and source material is weak. New Montessori programs without proper foundations have diminished chances of surviving as alternative models because they often drift from their initial Montessori goals.

It is the conviction of the North American Montessori Teachers' Association (NAMTA) that if there is a clear definition of Montessori curriculum, then Montessori can be accomplished in its fullness even when initial prevailing conditions are not always sympathetic to Montessori education. The potential for quality education in the public schools is greatly enhanced if the Montessori curriculum tradition insists on knowledgeable implementation built on a child-tested, time-proven set of practices. The long-term gain resulting from a careful construction of Montessori is that the pedagogy remains intact, the child receives a coherent educational experience, and the Montessorians have a framework in which to continue the Montessori dialogue. Thorough implementation of Montessori means that the school district, as it establishes its various "schools of choice," will be able to advance a Montessori model that is recognized by parents as an established and unique program for their children.

As Montessori moves into the public arena and as the outside world makes its assessment of the Montessori community, there is a new level of cooperation necessary to deal with the

FOREWORD

increasing size of the movement. As an outgrowth of NAMTA public school research and documentation, the Nienhuis Corporation has funded the establishment of a Montessori Public School Consortium located at Cleveland State University, under the direction of Dr. Mary Boehnlein. This consortium has received the encouragement of both the Association Montessori Internationale and the American Montessori Society, and is an effort to consolidate and disseminate Montessori information as it pertains to Montessori public schools. It is hoped that Montessori public education will be developed without compromise to its original spirit and without losing sight of Dr. Montessori's desire to help all children, regardless of socio-economic and cultural backgrounds. Montessori in the public sector would then afford an opportunity to achieve our highest aspirations in a new initiative which, if successful, would provide a professional environment with adequate resources and institutional stability to bring Montessori into the twenty-first century.

David Kahn,
Editor

ACKNOWLEDGMENTS

The research and production of this work were made possible in part by funding from Nienhuis, Inc. and the Cleveland Foundation. Particular gratitude is expressed to the NAMTA Board of Trustees for their foresight in enabling the publication of this work through support with NAMTA funds and other resources.

An outstanding vote of appreciation goes to Jean K. Miller, who has not only provided a major section of this book at great personal sacrifice, but has contributed ongoing editorial and professional review of the process. Joanne Bailis, as Managing Editor, provided indispensable direction to form, content, and production. Thank you as well to Mary Boehnlein, who has furnished continuing editorial support as well as an office for the project.

A special acknowledgment goes to our other readers — Tim Duax, Gerald T. Johnson, Kay Baker, Paula Biwer, Barbara Kahn, Kay Martin, Karen Hahn, and Mark Hopkins. To all the schools that mailed their various documents, thank you for caring. Finally, the members of NAMTA deserve commendation for their tolerance and patience in allowing for the delays on this project.

NAMTA expresses its gratitude to AMI-USA for facilitating the pedagogical review of the Association Montessori Internationale.

TABLE OF CONTENTS

IMPLEMENTING MONTESSORI IN THE PUBLIC SECTOR

TABLE OF CONTENTS

CHAPTER ONE: THE MONTESSORI MISSION

Montessori Magnet Schools and Contemporary School Reform
by David Kahn 10

School Restructuring and At-Risk Students: San Lorenzo Revisited
by Christopher M. Harris 15

CHAPTER TWO: MONTESSORI CURRICULUM OVERVIEW AND RESOURCES

by Jean K. Miller

The Prepared Environment 28
Practical Life 38
Sensorial 45
Language 49
Mathematics 66
Geometry 87
Science and Social Studies 94
Specialty Subjects 127
Music 131
Art 136
Supplier Directory 137

CHAPTER THREE: LANGUAGE ARTS

The Teaching of Reading and Language Arts in the Montessori School
by Mary Maher Boehnlein 144

The Montessori Environment as a Setting for Bilingual Education
by Alice M. Renton 157

CHAPTER FOUR: IMPLEMENTATION

Montessori Training 164

Appendix 1: "Ten Steps to Montessori Implementation" excerpted from Montessori Public School Consortium Report 168
Appendix 2: "A Study of College and University Accredited Montessori Teacher Training Programs" excerpted from NAMTA Journal 169

The Curriculum Mesh: Montessori and District Requirements 175

Appendix 3: Learning Outcomes — Vancouver Public Schools 177
Appendix 4: Third Grade Math — Cincinnati Public Schools 178
Appendix 5: Pupil Performance Objectives — State of Ohio 179

TABLE OF CONTENTS

Supervision and Organization 180

Appendix 6: Montessori Scope and Sequence (K-8) — Ruffing Montessori School 189

Appendix 7: "Montessori Program Coordinator/Resource Teacher" excerpted from the Montessori Public School Consortium Report, *1988.* 190

Appendix 8: Observation Form, Extent of Model Implementation (Preschool) — Philadelphia 191

Appendix 9: Observation Form, Extent of Model Implementation (Elementary) — Philadelphia 193

Appendix 10: Implementation Checklist — Rita Schaefer 195

Appendix 11: Suggested Preschool Work Levels — Midwest Montessori Training Center, Milwaukee, Wisconsin 196

Appendix 12: Primary Language, Math, and Geometry Record Keeping Documents — Milwaukee Public Schools 198

Appendix 13: Work Curve Charts (originated by Dr. Montessori) 200

Appendix 14: Work Curve Chart — London, England 201

Appendix 15: Work Curve Chart for One Week (Preschool classroom) — London, England 202

Appendix 16: Weekly Lesson Plan Sheet — Milwaukee Public Schools 203

Appendix 17: Record Sheet for One Child — Milwaukee Public Schools 204

Appendix 18: Weekly Group Lessons, Whole Class — Milwaukee Public Schools 205

Appendix 19: Page from Student Journal — Milwaukee Public Schools 206

Appendix 20: Traditional Report Card — Cincinnati Public Schools 207

Appendix 21: Montessori Checklist Report Cards — New Orleans Public Schools 208

Appendix 22: Blank Report Card — Milwaukee Public Schools 214

Appendix 23: Internal Checklist for the Elementary — Milwaukee Public Schools 216

CHAPTER FIVE: EARLY CHILDHOOD EDUCATION

The Importance of Beginning Montessori at Age Three
by David Kahn 222

Appendix 1: Proposal for the Implementation of Two Basic Requirements Necessary for a Montessori Specialty Program — Milwaukee Public Schools 225

Appendix 2: Early Childhood Fact Sheet, High/Scope Educational Resource Foundation — Ypsilanti, Michigan 233

Appendix 3: Interface of Privately Supported Three and Four Year Olds with Publicly Supported Five Year Olds — Cincinnati Public Schools 234

Appendix 4: Process Paper, Developing a Not-For-Profit Support Foundation — Cincinnati Public Schools 235

Appendix 5: Articles of Incorporation and By-Laws — North Avondale Public School Foundation, Cincinnati Public Schools 238

Appendix 6: Promotional Brochures — Cincinnati Public Schools 243

Appendix 7: Application Form for Admission — Cincinnati Public Schools 245

Appendix 8: Pre-Kindergarten Brochures — Philadelphia and Milwaukee Public Schools 246

Appendix 9: Parent Handbook — Arlington, Virginia Public Schools 256

TABLE OF CONTENTS

Appendix 10: Joint Venture Proposal — Marotta Montessori Schools 259
Appendix 11: Headstart Expansion Proposal — Marotta Montessori Schools 260
Appendix 12: Equivalences for Montessori Teacher Training and Headstart — Cleveland, Ohio 263
Appendix 13: Early Childhood Funding Appropriations Guidelines Fact Sheet — Marotta Montessori Schools 267

For the Trained Montessorian: Adjusting to the Montessori Kindergarten Classroom of All Five Year Olds
by Hildegard Solzbacher 268

CHAPTER SIX: SPECIAL EDUCATION

Introduction 272

A Brief Overview of Montessori Special Education
by Muriel W. Adcock 273

Special Education Resources 277

Montessori and Special Education
by Rae Rosen 279

Montessori and the Child with Developmental Disabilities
by Nimal Vaz 283

CHAPTER SEVEN: STARTING A SCHOOL

Developing a Proposal 292

Common Misconceptions School Districts Have About Montessori Education 295

Appendix 1: An Alternative Education Program Proposal to the District of Columbia Public Schools 297
Appendix 2: Proposal Summary, Implementation Planning — Montessori Public School Consortium 311

Securing Montessori Magnet School Funding
by David Lerch 313

Appendix 3: Magnet School Proposal Excerpt — Dayton Public Schools 315
Appendix 4: Task Force Planning for New Magnet School — Kansas City Public Schools 317
Appendix 5: Preliminary Flier for Mitchell Montessori School — Denver Public Schools 324
Appendix 6: Certification Rules — Wisconsin Department of Public Instruction 325
Appendix 7: School Audits — Cincinnati Public Schools 326

CHAPTER EIGHT: ADMISSIONS

Admissions and Recruitment 332

Advantages of Non-Selective Admissions
by Timothy Duax 333

Case Study: Montessori Magnet School Recruitment
by Martha Vincent 335

TABLE OF CONTENTS

Appendix 1: Recruitment Brochures — Vancouver, British Columbia; Denver; and Cincinnati 337
Appendix 2: Recruitment Wall Poster — Sands Montessori School 343
Appendix 3: Observation Form — Houston Public Schools 345
Appendix 4: Application Form — Vancouver Public Schools 346
Appendix 5: Application Confirmation Forms — District of Columbia Public Schools 348
Appendix 6: Parent Survey — Vancouver Public Schools 349
Appendix 7: Interview Form — District of Columbia Public Schools 350

CHAPTER NINE: PARENT INVOLVEMENT

Montessori: The Childrearing Model 354
Appendix 1: Suggestions for Activities for the Preschool Child — District of Columbia Public Schools 357
Appendix 2: Discipline: Objectives and Goals of a Montessori School — Milwaukee Public Schools 359
Appendix 3: Discipline: Conduct Sheet — Cincinnati Public Schools 363
Appendix 4: Code of Discipline (1988) — Cincinnati Public Schools 364
Appendix 5: The Classroom Tour Made Simple — District of Columbia Public Schools 365
Appendix 6: "Television: It's Not What you Watch" — Montessori Talks to Parents 380
Appendix 7: "Nutrition, the Home Eating Environment," Montessori Talks to Parents 381
Appendix 8: Northrop News Splash — Minneapolis Public Schools 382
The Bennett Park Montessori Association: A Collaborative Model of Home-School Partnership
by Rae Rosen 383
One School's Story About Parent Involvement
by Sandra J. Sommer 387
Parent Involvement in a Montessori Program: The Denver Public School Experience
by Ana Maria Villegas and Paula Biwer 392
Montessori in the City: Working with At-Risk Families
An interview with Alcillia Clifford 400

CHAPTER TEN: EXPANSION

Expansion: Planning Proposals 410
Relocation 412
Appendix 1: Alternative Montessori Program Relocation Brief — Vancouver Public Schools 414
Appendix 2: Montessori Enhancement and Expansion Proposal — Lorain City Schools (Ohio) 420
Appendix 3: New Faxon Montessori Magnet School Site Plan — Kansas City, Missouri 426

TABLE OF CONTENTS

CHAPTER ELEVEN: EVALUATION

The Mitchell Elementary School Improvement Plan
by The Staff of Mitchell Montessori School 432

The Socialization of Children in a Montessori Classroom
by Ana Maria Villegas 458

Two Sample Case Studies
by Ana Maria Villegas 469

Research and Evaluation Sumary of Montssori Programs
Mary Maher Boehnlein 476

Towards a Montessori Evaluation Approach
by Lakshmi A. Kripalani 484

INTRODUCTION

THE MONTESSORI MISSION

MONTESSORI MAGNET SCHOOLS

MONTESSORI AND THE CHILD AT RISK

This historical and social overview of Montessori schools in the public sector provides an understanding of the usefulness of Montessori pedagogy as a means of national public school reform. Although Montessori is not a panacea, it is seen by many as a successful educational alternative for children of low socioeconomic backgrounds.

THE MONTESSORI MISSION

MONTESSORI MAGNET SCHOOLS AND CONTEMPORARY SCHOOL REFORM

by David Kahn

- ***The Montessori magnet schools find their roots in alternative education. The formative period for alternative, experimental schools coincided with the formative period of federal court-ordered desegregation plans for America's urban centers.***
- ***Montessori magnet schools are expanding at an increasing rate; their successes can be measured in terms of cost, desegregation impact, educational quality, and thematic cohesiveness.***
- ***Montessori is valued for its instructional uniqueness as a whole pedagogy. A comprehensive curriculum gets comprehensive results.***
- ***The Montessori child-centered curriculum is in keeping with national educational trends.***

INTRODUCTION

The Montessori model of education has been in existence since 1907. The Association Montessori Internationale was established for the safeguarding of the method in 1929, and Montessori has been rooted in the American alternative education tradition since 1959. Although introduced in America as early as 1910, the popularity of Montessori education has emerged primarily in the last thirty years. In 1989 various forms of Montessori are implemented in almost 3,000 private schools and in 100 public school projects of varying scales and implementation styles. About one-third of the Montessori public schools were established as "magnet schools" to redistribute racial and economic imbalances; one-fourth were founded by Montessori teachers and parents wanting their Montessori experience to be supported by public funds, with the remaining balance supported by a variety of motivations aimed at combined educational reform and voluntary desegregation (Kahn, Boehnlein, Villegas, 1987).

MONTESSORI MAGNETS – A COMPREHENSIVE EDUCATIONAL REFORM

The purpose of this chapter is to demonstrate the usefulness of Montessori education, not only as one tool to assist in desegregation in the context of magnet schools, but also as a comprehensive educational reform which is compatible with today's magnet school mission.

To gain insight into the emerging importance of Montessori magnets, it is important to look at the evolution of both the Montessori and magnet school movements, how they differ and how they coincide.

Magnet School Beginnings and Montessori

Montessori magnets find their roots in alternative education. Fantini states that the first alternative education models were outside of public education (Fantini, 1972). This holds true for Montessori, which began in the private sector and added about fifty private schools a year between 1960 and 1970. It is no wonder that by the late sixties Montessori books were on sale with those of Neill, Kozol, Dennison, Herdon, Holt and Goodman. Small, private experimental schools reached a new status in the early seventies;

likewise Montessori schools were operated by a handful of teachers and parents "working around the clock for sub-standard wages trying to run a school on a shoestring" (Fantini, 1972).

This formative period for alternative, experimental schools coincided with the formative period of federal court-ordered desegregation plans for America's urban centers. Rossell and Hawley (1981) reported that court appointed officials and urban school boards believed they had learned an important lesson about desegregation during this time: when the issue was busing for desegregation, blacks would ride the bus, but significant numbers of whites would flee or actually fight to stay off. Orfield (1981) noted that a quarter century after the *Brown v. Board of Education* court decision, desegregation policies had little impact on big cities, and a growing number of them were reaching the status of virtually all-minority school populations. He was concerned that policies were urgently needed which could successfully reduce segregation in metropolitan centers.

As a result, the increasingly minority public school population and the racial violence which surrounded mandatory busing for desegregation, as exemplified in the Boston, Little Rock, and Pontiac school systems, lead desegregation planners to seek methods which would *attract* children to desegregation schools (Coleman, 1981). Since the desegregation schools were meant to attract children, they were called magnets.

In the early seventies, magnet schools were being set up on a small scale in Michigan and Minnesota. By the late seventies, a provision of the federal Emergency School Aid Act called for the spending of $25 million in 1977 and $50 million the following year for planning and operating magnet schools (Fullington, 1988). Magnet schools were seen by some as a serious solution for desegregation to be supported by federal funds. By offering specialized and unique curricula, it was hoped that magnet schools would attract students of all races and economic levels on a voluntary basis.

Montessori Curriculum Merges with Magnet Concepts

By 1978 the Montessori model had already become prominent in the early childhood movement as part of the "war on poverty." Furthermore in the seventies, Montessori private schools were expanding their Montessori curriculum through the sixth grade. An estimated 100 to 200 classrooms nationwide represented a developed and self-sufficient alternative education model with its own materials, time-tested curriculum and pre-trained teachers. In keeping with the Brunerian "curriculum spiral" proposed in the late fifties, Montessori programming provided an interconnected, internally consistent model, easily put in place as long as trained teachers were available. It is not surprising then that the eighties saw a 500 percent increase in the number of Montessori magnet schools. Their successes were measured in terms of cost, desegregation impact, educational quality, and thematic cohesiveness.

Schools of Choice: The Problem of the Match

In the seventies, the "schools of choice," as magnets are sometimes called, were revered for their ability to provide options according to the personal interests of teachers, students, and parents. The dynamic of choice created competition among the magnet schools which insured a higher level of fitness and accountability within each program (Joy and Clowell, 1988). Until recently, magnet schools were evaluated on this basis — to hold and attract (Frey, 1988). Both Fantini and Fullington write that fundamental to choice is the school objective of "talent identification and cultivation" (Fullington), which suggests that every person can develop a talent which will ultimately evolve into a career. The choice of school deals with the *problem of the match*. The general assumption is that the magnet school must offer specific interest areas to *match* specific needs of children.

The medical, legal, and arts communities along with libraries and museums, interacted with magnet schools to provide "enrichment" components. Community partnerships suggested a variety of themes. There could be a business magnet, an arts academy, a health professional curriculum, computer magnets, humanities, world studies, second language, etc. Each specialty magnet offered a core curriculum which included a special focus or subject area (Joy and Clewell, 1988).

Schools of Choice: The Comprehensive Curriculum

Recently, however, particularly at the elementary level, the focus has shifted from the curriculum specialty schools. Dentler's 1988 criteria for what makes a magnet school indicates a shift from the emphasis on choice of unique "special" offerings to that of *instructional uniqueness*. A magnet school, says Dentler, has "a distinctive curriculum based on a special theme or method of instruction." Magnets still maintain their role in desegregation, their consumer choice option, their open access to school enrollment beyond the neighborhood zone, but the "alternative" curriculum as a unique delivery system is coming to the forefront. Dentler states that even specialties are included as part of "progressive and alternative pedagogies embracing self-paced or age-mixed groups" (Dentler, 1988).

Another report accents once again choice, not of specialized programs such as computer and foreign language, but rather of instructional style. Instructional styles are characterized as two extremes — "the fundamental schools with an emphasis on basics had a more structured, disciplined atmosphere and the gifted and talented schools with experimental, flexible curricula were more relaxed and informal" (Joy and Clewell, 1988). This shift suggests that more than ever magnet schools are playing a major role in the educational reform movement, delving deeper than previously into pedagogical schools of thought. As soon as this shift becomes more evident, school districts will have to pay more attention to the pedagogical principles that communities are beginning to discern.

More than ever magnet schools are playing a major role in the educational reform movement, delving deeper than previously into pedagogical schools of thought.

Montessori: A Well Rounded Education

As the demand for Montessori magnets increases, it is important to indicate that although the Montessori model has some unsurpassed results, it operates with well-defined program strictures which are unique to Montessori and very different from the original "schools of choice" rationale. The Montessori premise is that it works for every kind of child *when the community, the school staff and the administrator and parents are in agreement with the tenets of Montessori philosophy.* Those looking to magnets to develop a specific talent will find that Montessori curriculum activity deals with a well rounded view of human potential which it assumes is present within every child. For example, the Montessori magnet might not provide an optimum facility for instrumental music as would a music magnet school, but it would endeavor to develop music universals appropriate to human development. The only specialization in the classroom is initiated by the child's choice of activity. But the teacher, who is the enlightened generalist, will at the right time endeavor to interest the child in all subject areas.

Comprehensive Curriculum Gets Comprehensive Results

"Piecemeal reform measures beget piecemeal effects, if any" *(Science for All Americans*, 1989). When a district chooses a comprehensive approach such as Montessori, it is dealing with many levels: the preparation of teachers, the content of the learning materials, testing methods and evaluation technique, and the very organization of the school. Creating a Montessori magnet requires careful planning of curriculum sequence, reallocation of material resources, and careful delineation of teacher career paths within the schools. Failure to establish planned priorities for a whole curriculum system may leave the students worse off than before Montessori programming was adopted. Well-planned Montessori programming means a lasting school alternative with a process that is clear. Such a process can respond to change within a stable framework.

Teacher Education is Essential

The starting point is teacher education. Alternative teachers need preparation for new structures and approaches. If a teacher has been teaching in a lock step, skill drill fundamental program, he or she needs to know how to substitute new strategies for old. Teachers need to see clearly how curriculum must be adapted to the child, not the child to the curriculum. A matter of word and deed, educational reform must go to the philosophical roots of the teacher's methodology. This can only be done with thorough knowledge of a child's developmental timetable. In addition, teachers need educational tools which are designed to acquaint the child with the independent explorations of subject areas through manipulation, writing, reading, guided discovery, etc. Montessori teacher training reorients the teacher to new levels of understanding. Methodology and content come after a philosophical view of the child has been established. It is definitely a difficult path to take, but Montessori teacher training can activate a restructuring of the teacher's whole approach.

Montessori training may offset what George Frey has pinpointed as resistance to change in teachers and administrators. "They are afraid of losing power or control...the new concept means more work. Or, perhaps they feel changing negates the value of their past work...." (Frey, 1988). Strong knowledge of curriculum philosophy, scope, sequence, and methodology helps teachers predict change and treat change as a "process and not an event" (Frey, 1988). The change process is based on personal experience involving growth of knowledge integrated with a change of personal philosophy. This special formation is exactly what good Montessori training is about. Montessori teacher training includes observation in an established Montessori classroom in order to observe the new philosophy and methodology at work. This is followed by a practicum in two or more established classes so trainees may experience implementation in action.

Montessori Education Inspires Family Commitment

Montessori's philosophy attracts and holds families for the extent of the school's gradespan and beyond. Parents learn a new way of seeing their parenting role which can last a lifetime. Montessori sustains parents, and it invites them from the beginning to embrace its principles of childrearing, the prepared environment, the will to belong, the role of movement, etc. If a program starts at age three, the intimacy and involvement of parents is higher; parents become loyal to the school community and to the very philosophical roots of the pedagogy involved. Preliminary research (Villegas) is beginning to demonstrate the extraordinary impact that Montessori parent education has had on the retention and success of children enrolled in a Montessori school. It is the philosophy of child development that brings both parent and teacher into a deeply felt commitment to the Montessori educational program. Why? Because Montessori is seen as an "aid to life" which begins at birth. Home life is considered indispensable to learning because children are learning well before mandatory school age. When the parent commits to Montessori, the parent commits to more than an educational idea. The parent relates to the vital process of human development which is clearly presented in the Montessori philosophy. Montessori brings to magnet schools what Frey considers to be a primary magnet school characteristic — "a unifying sense of purpose felt by the staff, students and parents" (Frey, 1988).

The Montessori premise is that it works for every kind of child when the community, the school staff and the administrator and parents are in agreement with the tenets of Montessori philosophy.

THE MONTESSORI MISSION

The Child-Centered Curriculum — A National Trend

Frey and others have hinted that "magnet schools, in the forefront of innovation and change, have created blueprints for use by those who are now starting to restructure comprehensive schools." This means that those magnet schools which have undergone true curriculum reform, such as Montessori, will be enlisted to help with the larger educational reforms of the future. It is clear that the public is demanding educational revision and new directions which place the child in an active learning role. The April 17, 1989 *Newsweek* cover story, entitled "How Kids Learn," called for a child-centered curriculum involving movement, manipulation and discovery. The educational mainstream is ready for a more humane and engaging child-centered curriculum. Montessori magnet schools can play a major role in the improvement of child-centered education for the following reasons: *An extensive history of operations, a well-developed teacher training support, curriculum depth, and parent involvement.* As magnet concepts are being reviewed for their educational integrity, Montessori magnets will be a well-researched and in-depth curriculum option, ready for all kinds of learners in a variety of settings. As school reforms continue to be national trends, a well-organized Montessori body of work may provide the nation with a process of education which can help every school district meet increasingly high expectations. Such schools provide quality alternatives that really work and match theory with results.

REFERENCES

American Association for the Advancement of Science. *Science for All Americans*, 1989.

Coleman, J. *The role of incentives in school desegregation*, a chapter in Race and Schooling in the City. Edited by Yarmolinsky, A., Liebman, L., and Corinne, S. Harvard University Press, Cambridge, 1981.

Dentler, Robert A. *The Magnet Schools Survey.* Unpublished Research Paper. Boston: University of Massachusetts, 1988.

Fantini, Mario D. "History and Philosophy of Alternative Schools," *Magnet Schools: Legal and Practical Implications*, ed. by Nolan Estes and Donald R. Waldrip. First Annual International Conference on Magnet Schools, Dallas, Texas: New Century Education Corporation, 1972.

Frey, George. *The Success of Magnet Schools.* Unpublished, 1988.

Fullington, Gail Grafflin. *Magnet Schools from the Students' and Parents' Perspectives.*

Joy, Myra F. and Beatriz Chu Clowell. *Evaluation of a Magnet School System: A Case Study Approach.* Paper Presented at the Annual Meeting of American Educational Research Association. New Orleans, April, 1988.

Kahn, Boehnlein, Villegas. NAMTA survey, unpublished, 1988.

Orfield, G. *Housing patterns and desegregation policy.* (A chapter in Effective School Desegregation: Equity, Quality and Feasibility.) Hawley, W. editor, Sage Publications, Beverly Hills, 1981.

Rossell, C. & Hawley, W. *Understanding white flight and doing something about it.* (A chapter in Effective School Desegregation: Equity, Quality and Feasibility.) Hawley, W. Editor, Sage Publications, Beverly Hills, 1981.

THE MONTESSORI MISSION

SCHOOL RESTRUCTURING AND AT-RISK STUDENTS: SAN LORENZO REVISITED

by Christopher M. Harris

- ***Fundamental changes in how we assist at-risk students and their families must become a national priority.***
- ***Education of at-risk students must change from a pedagogy of minimal basic skills to that of learning what is critical, diagnostic, adaptable, and longlasting.***
- ***School-based decision making can improve learning.***
- ***Whatever changes are made in our educational system, the overriding concern must be to improve learning for all children, especially those at risk of school failure.***
- ***The Montessori model of education has been used successfully with at-risk children.***
- ***Magnet schools hold the potential for both positive and negative impacts on children, particularly those at risk of later failure.***

EDUCATIONAL REFORM

In the late nineteenth and early twentieth centuries, education in the United States was influenced by the Progressive Movement which criticized the nation's schools for providing most students with an education that was rigid, passive, and rote-oriented, resulting in learners unable to think critically, to synthesize and transform, or to experiment and create. This movement was followed by one which stressed standardization of learning. The 1920s saw what educational historians call the Efficiency Movement. Many readers will also recall the teacher-proof curricular reforms of the 1950s and the "back to basics" movement of the 1970s.

In the last two decades, efforts to change the educational system of this country have been collectively described as being part of the educational reform movement, or more precisely, as part of one of several "waves" of educational reform (Pipho, 1988). The product most writers cite as the lightning rod of educational reform in the 1980s was the federal report, *A Nation At Risk* (National Commission on Excellence in Education, 1983). That report and the other reports released soon after by a variety of blue-ribbon commissions helped to bring increased attention to the pressing need for changes in how children in the United States were being schooled.

An enormous amount of activity in the effort to reform education has occurred since the publication of those reports. Federal, state, and local education agencies as well as foundations and corporations all have become involved in the discussion, design, and implementation of changes in the educational system. The states have emerged as the most visible actors in these various reforms (Brown, 1987; Doyle and Hartle, 1985). The National Governors' Association report, *Time for Results* (NGA, 1986), received considerable attention and indicates how active governors have become in the area of educational reform. State legislatures, too, have dramatically increased their attention to education. State-level action has included the formation of over 270 state task forces and commissions as well as the enactment of more than 700

Christopher Harris is a Project Associate at the Council of Chief State School Officers' Resource Center on Educational Equity in Washington, D.C. There he oversees and assists council activities to meet the educational needs of at-risk students. He also works closely with state departments of education, national education associations, and advocacy groups on policy development, legislation, and implementation of Council programs affecting children and youth at risk to school success.

statutes between 1985 and 1987 to direct educational reform. Between 1970 and 1981, twenty-eight states reformed their school finance systems (Furhman, 1982).

Recommendations for reform in this period have focused on educational "excellence," including increased graduation requirements in the form of additional course work or exit examinations. Other recommendations resulting from the excellence wave have involved increased teacher salaries, new teacher assessment and certification tests, as well as merit pay and career ladders. The recommendations are varied and sometimes contradictory. For instance, increasing graduation requirements for high school students without providing additional assistance to those students at risk of school failure can serve to encourage those same students to drop out instead of improving their education. Likewise, poorly designed and biased exams that keep minority teacher applicants from certification help ensure that the seriously dwindling supply of minority teachers will diminish even further (Alston, 1988).

CHILDREN AT RISK OF SCHOOL FAILURE

Many argue that the reform movement of the early 1980s did little to help those students at risk of school failure. A decade of federal social policies, since 1980, which reduced assistance to low income families coupled with state and local educational reform policies which offered limited assistance to at-risk children and youth have taken their toll. There is a growing consensus among policymakers, national education organizations, and child advocacy groups at all levels, that fundamental changes in how, and substantial increases in how much, we assist at-risk students and their families must become a national priority.

Even a cursory glance at current economic, social, and educational indicators leaves the reader with a sense of emergency and a clear recognition that responsible people must move now to ensure the provision of necessary and high quality social, economic, and educational services to children and their families. Consider the following statistics reported by the Children's Defense Fund (1989):

- If current trends in child poverty continue, between now and the year 2000, *all* of the growth in our child population will consist of poor children — in the year 2000 one in four of all American children will be poor — an increase of three million from 1987;
- Among all children (up to 18 years of age) in America, one out of five is poor; among infants and toddlers younger than three, one in four is poor;
- Among black children, nearly one out of every two is poor;
- By the year 2000, the total number of minority children will increase by more than twenty-five percent and will constitute one-third of all children; the number of white, non-Hispanic children will increase by one two-tenths of one percent;
- Regardless of race, poor youths are almost three times more likely than their well-off peers to drop out of school;
- According to the U.S. Department of Education, only a small minority of the millions of students with limited English proficiency are currently receiving adequate bilingual education services;
- Approximately one-fourth of all students fail to graduate from high school; in some urban areas well over fifty percent fail to graduate; and
- More than half of the new jobs created between 1984 and 2000 will require some kind of education beyond high school, with almost one-third requiring four or more years of college.

These statistics, of course, are not simply numbers, they are people and they are predominantly women and children. Since 1980, this nation has chosen to spend just under two trillion dollars on the defense of a system that not only permits but creates the poverty, racism, and sexism which these statistics rather coldly outline. In this same period of time, we have seen cuts of forty billion dollars made in programs for low income children and families.

Unconscionable injustices have resulted from policies in this country that permit pregnant young women to go without proper prenatal care, young children to live through infancy with inadequate nutrition and without necessary immunizations, and school-age children to attend schools in dilapidated, dangerous buildings with inadequate materials and inappropriately trained teachers. Earlier calls for improved educational and related services for at-risk children and youth — based in justice and compassion — have gone largely unheeded.

More recently, a number of prominent people outside the field of education have called for improved education for reasons of international economic competition. The demographer, Harold Hodgkinson (1986), explains that in the early 1950s every American retiree was supported by seventeen active workers, while in the 1990s each retiree will only have three workers for support. More than one-third of those workers will be minorities. Business leaders in organizations like the Committee on Economic Development (1987) argue that the soundest investment in America's *economy* is the provision, at public expense, for high quality early childhood and family education and related services for those at risk. While some may question the seriousness of the interest business leaders have expressed in at-risk students, at least their rhetoric focuses public attention on the current unmet needs. Whatever the source of recognition, the problems remain.

In an optimistic joining of these two points of view — of social justice and economic self-interest — Marian Wright Edeleman, President of the Children's Defense Fund (CDF), has written, "In the waning years of the twentieth century, doing what is right and doing what is necessary to save our national skins have converged. I see the 1990s as a marvelous opportunity to revitalize and strengthen our democracy." Edelman goes on to spell out in detail what the national agenda for children should be.[1]

Educators of all stripes have a particular responsibility in meeting the needs — difficult and complex as they may be — of at-risk youngsters. Research shows clearly that low income students, minority students, and students with limited English proficiency are many times more likely to attend schools with inadequate facilities, work with low quality materials, and receive an unchallenging and inappropriate education. What is missing is not knowledge. We know how to teach all children. We know that different individuals learn in different ways and at different times. Absent is the universal commitment at the national, state, and local levels to ensure that students at risk are provided an effective and appropriate education.

SCHOOL RESTRUCTURING

For all students, but especially for at-risk students, to become responsible citizens and productive workers in the next decades, the nature of what is meant by "effective learning" must change fundamentally. The attainment of basic skills or minimal competencies alone is not adequate preparation for life. Schooling must develop and support the ability to think critically and creatively; to be flexible and reflective; to engage in respectful dialogue; to make ethical judgements; and to develop what early childhood expert Lilian Katz calls "a disposition for learning." The end result of instruction must be much more than basic literacy and numeracy — it must be improved student comprehension and thinking. Almost universally, schooling for at-risk students has stressed the former rather than the latter. The education of at-risk students must change from a pedagogy of minimal basic skills to a pedagogy of learning that is critical, diagnostic, adaptable, and long-lasting (CCSSO, 1989).

It is abundantly clear that young people in the 1980s and 1990s must graduate at least from high school in order to have access to an economically secure life. Continuing failure of the schools to adequately serve and appropriately educate at-risk students, and demographic trend data that show that these same young people are quickly becoming a much larger percentage of our future work force have, together, forced a growing number of people to agree that changes in schools of a more fundamental or structural nature are necessary in order to have schools be successful with *all* students. Calls for schools to be "restructured" have come from numerous sources (and of course mean different things). The Carnegie Forum on Education and the Economy (1986), the National Governors' Association, the National Association of Advocates for Students, The Council of Chief State School Officers, the National Association of State Boards of Education, as well as the American Federation of Teachers and the National Education Association have all publicly stated the need for fundamental, not just marginal, school change — for school restructuring.

At the same time there have been individual proposals and projects to restructure schools including Ted Sizer's Coalition of Essential Schools, Mortimer Adler's Paideia Proposal, Henry Levin's Accelerated

Learning Schools, Robert Slavin's Cooperative Learning, and Johnson and Johnson's study, to name five. While the details of each of these proposals differ, they all agree that the current way a school is organized and how students are taught frequently hinder rather than encourage changes which might improve students' learning.

The goals and elements of these and other restructuring proposals vary widely. Ted Sanders, the current U.S. Under Secretary of Education, wrote as the past president of the Council of Chief State School Officers in his 1988 working paper to that organization:

> In the absence of a coherent and unifying structure which makes apparent their relationships to one another and to the improvement of schools in general, there appears to be a supermarket filled with interesting products, allowing one to pick a teacher reform here, a structural reform there — potentially ignoring the need for comprehensiveness in approach (Sanders, 1988).

Despite this variety of "products" in the restructuring market, four major education variables or elements frequently appear in research and discussion about school restructuring:

1. **School Governance** — resulting more often in the decentralization of authority to the school site, thus allowing those closest to the student the flexibility to design the most appropriate educational setting and practice.
2. **Nature and Organization of Curriculum and Instruction** — changed in ways that provide a creative, flexible, and challenging education for all students, especially for those at risk, not rote learning of discrete facts and an emphasis solely on basic skills.
3. **New Professional Roles for Educators** — permitting professional educators at all levels to focus on educational success for *all* students and providing all the necessary support for education success; focusing on critical and higher order thinking skills, rather than emphasizing compliance with procedures and regulations.
4. **Accountability** — emphasizing performance-based outcomes of a kind that support a pedagogy of thinking and active learning instead of driving an education of minimal competencies (CCSSO, 1989).

Among the most commonly discussed elements of attempts to restructure public schools is that of greater school-site management and autonomy — the decentralization of decision-making from district office personnel to school-based teachers and other staff. Increased participation in school decision-making, it is argued, is necessary in order to provide the flexibility and variety required to appropriately restructure the learning environment. Teachers know the needs and constraints of their individual schools and, as professionals, can best organize the school-site variables of time, place, personnel, budget, and pedagogy as they relate to the students' learning. Changes that permit teachers to assume much more responsibility at the building level for how the school operates, free them to act more like professionals — to innovate, to experiment, to construct different arrangements of all sorts in their effort to improve learning based on their knowledge of teaching and their familiarity with their individual school community.

Several schools in Miami (Dade County), Florida, for example, are experimenting with school-based management and school-based decision-making. One school copied the business sector's use of "quality circles" and now, with district encouragement, members of the staff meet in several groups to discuss, plan, and implement a broad range of activities formerly decided by the district office or solely by the principal. Both teachers and principal report much greater creativity in problem-solving and dramatic improvement in teacher morale and sense of professionalism. Dade County is not alone in this effort. A growing number of school districts across the country are piloting and experimenting with school-based decision-making of various sorts. Rochester, New York has received considerable publicity for its new teacher contract which abandons traditional union demands of seniority, for example, for dramatic salary increases (more than 40% over three years) tied to the Career in Teaching Program which can take new teachers from Intern to Resident to fully licensed Professional. Lead teachers in this system take on added responsibilities and work with those students with the most complex needs.

Hammond, Indiana — a former steel town, hit hard by a turndown in that industry — instituted its "School Improvement Process" where a growing number of decisions are now in the hands of school site committees made up of teachers, administrators, and community representatives. Several school teams have re-arranged blocks of time to allow greater concentration on reading or mathematics. One high school has established a voluntary teacher-mentor program to improve the quality of teaching.

The Chicago school system (the nation's third largest) is beginning what could be the most dramatic and comprehensive restructuring of governance, management and accountability that any district has faced in recent memory. A 112 page piece of legislation dissolves the current Chicago board of education and gives unprecedented influence to parent-led councils at each school. The central administration has been cut dramatically and schools will receive lump sum budgets to be arranged as school councils decide, subject to state and federal laws and collective bargaining agreements. Forty-six million dollars has shifted from the control of the central office to the local school councils who now decide how best to spend it.

The notion of parental choice has driven several districts, and now whole states, to develop systems of student assignment to schools based on the choice of the parents. Districts and states which develop school choice plans must face difficult and complex equity issues as they design their programs. As schools are restructured, other equity concerns must be solved. How, for example, will schools incorporate categorical programs into new arrangements of time and teacher assignment? Are magnet school programs equally accessible to *all* students or do they discriminate based on race and income (e.g., wealthier families generally have access to more information about program availability and can arrange transportation where necessary)? Are the needs of language minority students adequately considered in restructured schools — needs which are more complex than simply providing instruction in English? What assurances of quality services will there be for students in special education if waivers for regulations are permitted by the district office? Ingrid Draper, Director of Special Education for the Detroit Public Schools, has given careful thought to this last question and has designed an innovative and effective educational program in that city, but others have not been as successful.

Another critical issue in the discussion of school restructuring is accountability. If school-site staff and other educators up the hierarchy are to be held accountable for student learning, what sorts of assessment tools should be put in place? Can district or statewide standardized achievement tests co-exist with school-based decision making? Sizer's Coalition of Essential Schools has developed a performance portfolio for student evaluation. Vermont is currently implementing a similar evaluation procedure, recognizing that an over-reliance on multiple choice, single correct-answer tests frequently drives a similar sort of teaching. Some states and districts differ widely on the types of assessment systems they use, yet the discussion about appropriate testing is heated and widespread.

UNANSWERED CONCERNS

A centrally important question which must be asked repeatedly is, "What is the purpose of restructuring the school?" Harold Howe II, former U.S. Commissioner of Education, has criticized the economic argument that largely drives the current reform movement. At a 1987 symposium at Harvard University on excellence and equity in education he noted:

> It demands that schools produce excellence among the children of the poor for the sake of the nation's economic health. It wastes little time with concepts of equity or of our nation's need for independent-minded citizens to make a democracy and complex society workable. Lip service is paid to these latter concepts, but after appropriate rhetoric has been supplied, school reform is back to the serious business of rescuing our corporations from Japanese competition. Very little has been said, in defining school reform's goals...about developing among youth an interest in international understanding.

Is the purpose of restructuring schools merely to rearrange the players but to do little to change learning? In a restructured school this writer visited in Dade County, Florida, the use of "quality circles" for school-based management by the entire staff had done much to improve the teachers' morale and upgrade the physical plant. Both had deteriorated substantially and so this was a significant improvement. School spirit was reported as having improved by a very large margin. Yet, despite these important changes, the pattern of teaching — while somewhat improved — needed much more work. Except for a few "critical thinking" programs for children already doing well with classwork, most schoolwork was still based on a model of knowledge transmission, lecture and recitation — of minimal standards and basic skills. Test scores had risen and student writing had improved, but are they the sole and appropriate measure of a successfully restructured school?

How schools are governed, how curriculum and instruction are organized and presented, how educators relate to children and youth and their families, and how educators and students are assessed must *all* be driven by one overriding concern -- improving the learning of *all* children, particularly those considered at risk of school failure. To do otherwise is both unjust and short-sighted. Montessori education offers an important model that has been used successfully with at-risk children.

MONTESSORI AND SCHOOL RESTRUCTURING FOR AT-RISK STUDENTS

The Montessori method provides the adult with both a clear understanding of children's development and a detailed and varied pedagogy to support that development and thus aid learning in its largest and best sense. That Montessori classrooms and whole schools are appearing increasingly in the public education sector bodes well for the schools and for the expansion of the Montessori movement. Of course the most important question, as Maria Montessori so often stressed, has to do with the children. Her experience with the children of the San Lorenzo slums in Rome underscores her concern for at-risk children and youth. What, then, is the effect of the expansion of the Montessori method in public schools for at-risk students?

Given the current climate and trends in education in the United States, Montessorians can provide significant assistance to improving the education of disadvantaged children in at least three major ways: action in the debate on early childhood education, support for restructured curriculum and instruction, and carefully designed assistance with the expansion of specialized programs and magnet schools. The last two are directly tied to the debate about improved learning for at-risk students. The first, though not necessarily an element of school restructuring, has much to do with later educational success for at-risk children and youth.

Early Childhood Education

This is an historic moment in the effort to ensure the provision of high quality early childhood and parent education and related services for young, at-risk children and their families. Senators and members of Congress on both sides of the aisle, a Republican President, business leaders, and virtually every national educational organization, are calling for new and expanded federal support for child care. There has never been such a consensus on this critical social need. While the various actors mentioned above support very different proposals, before this time they have never *all* agreed on the need. The combination of more women in the workforce, more adults in poverty (meaning more people working at very low wages), and more children in poverty, work together to create a dramatically increased need for good childcare services. Organizations like the National Association for the Education of Young Children (NAEYC) have prepared detailed guidelines of program quality. Their work, influenced in no small part by the work of Montessori, spells out what is required for "developmentally-appropriate" practice.

New coalitions have been formed in support of expanded childcare. The Act for Better Childcare (ABC) bill, currently before Congress, is the result of difficult work by hundreds of people.[2]

Montessorians have access to unusually well-developed methodology and materials for early childhood education. While the early childhood movement is in virtual universal agreement about the importance of "developmentally-appropriate practice," many childcare workers need assistance in how to make that notion concrete. Montessorians can play an important role in this national movement by becoming active in the political drive to support legislation like the ABC bill. Montessorians should join with the NAEYC, CDF, and other child advocacy groups for political action in that regard. Also, Montessorians should seek local daycare providers and offer to share knowledge about child development and educational practice. These connections should be genuine sharing, with each participant actively and honestly interested in learning what the other has to offer. There is much out there that is valuable for all to learn. Maria Montessori frequently emphasized the need for adult humility when working with children. That humility, tempered with concern for the well-being of all children, should influence relations with other educators working with young children.

Restructured Curriculum And Instruction

Of the four major elements found in the various proposals to restructure schools noted above, one has to do with fundamental changes in the nature and organization of curriculum and instruction. It is in this area that Montessorians, particularly at the elementary school level, can provide substantial assistance in the effort to improve public education. Traditional schooling is based on deep-seated beliefs about the validity of a range of educational variables. In fact, these beliefs maintain that the components of education are anything but variable. Common educational practices regarding the structure of knowledge (e.g., basic skills vs. higher order thinking skills); instructional activities (e.g., passive, receptive learning vs. engaged activity); the size and composition of the group; and the arrangement of time (e.g., learning "periods," instructional day and year) are usually very limited. And yet this list is composed of educational "variables" which, by definition, means that they are changeable. The current range, hierarchy, composition, and organization of these educational variables are the result of identifiable historical circumstances — many of which are no longer relevant (e.g., the agriculturally-based school year which permits summer farm work appears arbitrary in urban Philadelphia, and the organization of schools that follows a 19th century factory model is wholely inappropriate for students who will live in the 21st century). Other educational practices are actually damaging (e.g., the widespread practice of tracking, which research shows reflects race and social class far better than innate ability to learn).

Educators in many places are not only beginning to examine the content of the curriculum (which still too often projects biases regarding gender, race, social class, language, and ethnicity) but are also examining the structure of the knowledge to be presented. Should students learn minimum competencies and basic skills (as district and state tests emphasize), or should they learn critical thinking skills and what Rexford Brown of the Education Commission of the States calls "thoughtfulness"? (Brown, 1988).

Time is too often used as if it were a fixed resource that students must learn within, instead of time being something flexible, pliant and asymmetrical that conforms to the students' learning needs. For example, many at-risk high school students must work at part-time jobs to support families, and teenage parents need to care for their children, yet most schools have rigid hours of operation and set times for learning periods. The contradictions here are evident. Schools need to loosen the year's schedule, the daily schedule, and the structure of timed learning. Teaching and learning both become restricted and limited by the current structure of time. Many educators realize the difficulty which results from such organization, and some are experimenting with different arrangements of time, group size and composition, instructional activities, and structure of knowledge; but typically, schools function as they have for two centuries.

Montessori elementary teachers could offer a great deal to the public school educators who are involved in experiments with new arrangements of schooling and, in particular, with those who are struggling to improve curriculum. Likewise, current school restructuring efforts regarding governance and school-based management could give much to Montessorians whose training offered few models of school management. If approached in a spirit of true respect and serious interest in learning, partnerships and exchanges between Montessori and public school teachers and administrators could prove to be very useful — particularly in areas with high concentrations of at-risk students. NAMTA members or staff at the Washington Montessori Institute and staff of the American Federation of Teachers' Center for School Restructuring — if they have not yet — should discuss how each could help the other in the effort to provide effective and appropriate education and related services to at-risk students and their families. These sorts of conversations and meetings could and should occur at the district level as well. Both the opportunity to learn from each other and the serious needs of at-risk students are too important to let preconceived notions of what the other does get in the way of useful dialogue. These conversations have begun in several cities but need to become more widespread and systematic.

THE MONTESSORI MISSION

Magnet Schools

There is a rapidly growing national discussion about parents' ability to choose the school their children will attend. President Bush has emphasized school choice as the main pillar of his education policy. One frequently used method of providing school choice is the development of magnet schools — schools with specialized programs which are supposed to attract students based on their interest in such programs. Magnet schools are perhaps best known from their use in the 1970s as tools for voluntary or court-ordered desegregation. Districts which have incorporated magnet schools for desegregation have had varying success. Nonetheless, many current proponents for school choice point to magnet schools as one way to allow parents to choose their children's school.

As the use of magnet schools (or alternative programs within schools) has spread, several districts have created Montessori schools as legitimate alternatives in the public system. On its face this is a laudable move and one which deserves increased support. A large part of this book deals with important aspects of the design and implementation of such programs.

A very important caveat must be expressed, however, regarding uncritical and overly enthusiastic acceptance by Montessorians of these programs. While answering the long-heard call to incorporate the Montessori Method into the public schools, the development of Montessori magnet programs and schools deserves very careful scrutiny, especially with regard to the educational outcomes for at-risk students. Public education in the United States is a very political endeavor, and Montessorians need to understand well the policy issues involved. School choice, in particular, is a much-debated, complex notion with many possible outcomes. Magnet schools hold the potential for both positive and negative impacts on children, particularly for those at-risk to later failure. Montessorians must be aware of the range of possible outcomes and ensure that those children and youth traditionally served poorly by public schools are not harmed by decisions to implement Montessori programs in the schools. The Hippocratic oath for physicians states that they should, *at the very least*, do no harm. This holds true for Montessorians as well.

While answering the long-heard call to incorporate the Montessori Method into the public schools, the development of Montessori magnet programs and schools deserves very careful scrutiny, especially with regard to the educational outcomes for at-risk students.

There are several important considerations regarding equity in the use of magnet schools. In districts where magnet schools are used to provide choice, a number of critical questions must be answered. In theory, choice is supposed to force schools to improve — schools will earn their enrollments, encourage a wider range of educational options, and push low quality schools toward self-improvement. Those schools which do not meet parental preferences will be faced with declining enrollments and will either improve or be forced to close.

This market model has produced success and failure in New York City, for example, where "choice" has been available for some time. Community District 4 (East Harlem) is frequently cited as a success story regarding choice. Yet it must be pointed out in strong terms that choice works well in District 4 because it is part of an overall school improvement process that has been underway for fifteen years. Choice was not the motive force for change; it was an ingredient along with many other ingredients. Teachers and administrators over considerable time developed programs in their schools; created smaller, more personal units within the school; crafted an exemplary parent information system; and worked to improve the counseling efforts in their feeder elementary schools. Only late in this effort was parental choice added. Also, the district is densely populated and all schools are reasonably accessible. Problems remain, however. For example, the district's bilingual schools and special education programs remain segregated from its schools of choice (Bastian, 1989). There is also concern that low income children still do not reach achievement levels as high as their more advantaged peers.

THE MONTESSORI MISSION

District 4 has received much publicity as a positive example of choice. Yet, the city of which it is a part also has a systemwide high school magnet plan. New York City's choice plan has magnet schools competing with comprehensive neighborhood high schools and demonstrates unsurprising results. Researchers have noted that, over time, four tiers of schools developed based on a strict hierarchy of resources and opportunities. On the top are elite academic high schools, followed by specialized theme schools, vocational schools, and at the bottom are the neighborhood high schools. Magnet schools are generally integrated, but neighborhood schools are reported to be entirely segregated — with low income minority students — and have access to few resources. Dropout rates in these schools for black and Latino students range from fifty to eighty percent. Ann Bastian, of the New World Foundation, has studied these schools and notes that New York provides an example of "false choices" because not all options are equal (ibid., 1989).

Programs of choice, if not carefully planned to suit the specific circumstances of the local community, can have a range of negative impacts. One frequently cited criticism is that certain schools will skim off the high achieving students and good teachers — frequently adopting screening and sorting mechanisms — draining resources from poorer schools.[3] Civil rights mandates (i.e., bilingual education, special education, desegregation) may be eroded — as in the example of New York City — when resources are redirected to magnet schools thereby encouraging re-segregation. An overemphasis on test scores as "proof" of magnet school success in their competition for students can serve to erode further a pedagogy of critical thinking and development of the whole child while encouraging teaching to the test. Differential access to information (i.e., middle class and wealthy parents get to "know" more about school options than do low income minority parents) about magnet programs assures differential access to those schools.

In a systematic and detailed study of high school admission and promotion policies in four major cities — New York, Chicago, Boston, and Philadelphia — Donald Moore and Suzanne Davenport (1989) describe serious inequities occurring in magnet school programs in those cities. Their report, "The New Improved Sorting Machine," examines placement and labeling practices used in high school admission, within-school tracking and grouping, and practices employed in promotion from grade to grade.

Moore and Davenport note that school systems (and any large organization) operate with a complex set of placement and labeling systems. In schools, the results of these practices over time have become controversial. The authors note four areas with implications for educational equity:

- Magnet schools and programs within schools have increased dramatically in all four school systems and have been praised by proponents of educational choice as a potent means for improving educational quality. Yet other researchers and analysts have argued that the admissions practice of many of these magnet schools are stacked against the average urban student and have created a set of virtually private schools within public school systems.
- Tracking and ability grouping within schools have been defended as ways of giving the most talented students, especially capable minority and low-income students, access to a challenging academic curriculum that will prepare them for college. Yet such grouping has been criticized as leaving lower track students with a school experience characterized by low expectations and rote learning.
- Special education has been expanded dramatically and advocated as a means for meeting special needs of students heretofore neglected by public schools. Yet its critics charge that special education often needlessly separates students from the mainstream educational program and that many of the placement and labeling decisions made about students who are supposedly mildly handicapped are capricious and do not lead to improved student performance.
- Many school systems have declared social promotion to be a root cause of poorly prepared high school graduates and have instituted stricter promotion policies, basing promotion from grade to grade on standardized tests measuring progress through system-wide curricula. Yet critics of retention conclude that there is decisive evidence that increased use of retention fails to improve student achievement and greatly increases the likelihood that students will drop out.

Their research offers a rich review of often subtle, unseen, and unintended practices which serve to foster inequities within the educational system, particularly within magnet programs. Montessorians who wish to ensure educational equity, and who are concerned about the quality of schooling for students considered at-risk, would do well to review Moore and Davenport's report. Montessorians who are involved in preparing magnet programs can learn from the equity problems found in design and implementation of similar programs in these four cities.

All educators must be concerned with the provision of high quality education for *all* children and youth. Those considered at-risk do not have access to the quality of programs available to their wealthier peers. The rehabilitation of inner-city and rural schools, the lowering of class size, the rebuilding of decaying physical plants, the recruitment and appropriate training of a talented and representative teacher corps, the improvement of curriculum and instruction to be challenging and flexible, the access to a range of necessary social and health services, are all central and fundamental needs which must be met if educators are to be responsible to their profession and the at-risk children currently served poorly by that profession.

Bastian states the problem well:

> - Optimally, choice will follow from a restructuring program that ensures that all students have quality alternatives from which to choose, all families will be fully informed of their options, all staffs will be engaged by and trained for their school mission, and every participant will have equal access, both physical and cultural access, to the school of choice.
> - In the absence of ideal conditions, there are a number of potential problems to assess in establishing any choice plan. First and foremost, we should be concerned about the potential for the further segregation of students along the well-entrenched lines of class, race, gender and handicapping condition. This is not only an issue of whether choice plans are non-selective, or randomly accept non-resident applicants (Bastian, 1989).

Montessorians should continue to help improve the quality of education of all children in the public schools, but must be particularly cognizant of the special situation facing children and youth at risk and work doubly hard to ensure that these young people are appropriately served. Magnet schools, in particular instances, might be appropriate tools to use in the endeavor to meet the educational needs of at-risk students, but Montessorians must be diligent and ensure that the concerns noted above are addressed, and not be accomplices in perpetuating educational segregation. Rather, Montessorians must be a voice — in word and action — for at-risk children and youth as was Maria Montessori decades ago in San Lorenzo.

FOOTNOTES

[1] Every reader of this chapter should have on his or her desk a copy of the CDF book, *A Vision of America's Future: An Agenda for the 1990s: A Children's Defense Budget*, and should re-read it frequently.

[2] At this writing, that bill has been held up by committee, despite having been passed by both the House and Senate. The product of an unprecedented coalition of more than a hundred education and children's groups, the ABC bill offers hope for thousands of low income children and their families. Hopefully that bill will become law by the time this book goes to print.

[3] The process of skimming has not been adequately researched. A review of educational literature related to skimming and magnet schools can be found in the unpublished dissertation, "The impact of nonselective magnet schools on a predominately Black community" (Tim Duax, University of Wisconsin-Milwaukee, 1988). Skimming is a complicated phenomenon in school systems with magnet programs which has been more talked about than studied. Those who write of skimming refer more often to studies which compare public and parochial schools or to studies demonstrating that social class is related to values and attitudes toward education or simply write of skimming in an essay format rather than citing evidence of what actually is taking place in cities with magnet school programs.

Often researchers have not been clear in defining the types of magnet programs they are writing about. Selective magnet schools (using formal or informal selection criteria) and nonselective magnet schools (accepting all students on a lottery basis) are often blended together in generalized discussion.

Recent research by Donald Moore and associates which examined high schools in four large cities still did not distinguish selective from nonselective programs. His conclusions are tautological — schools with selection criteria do indeed select (skim off). His research also gathered no data on elementary schools. Other cities have attempted nonselective magnet school programs: Minneapolis, St. Paul, Milwaukee, St. Louis, and Denver.

REFERENCES

Alston, Denise. 1988. *Recruiting Minority Classroom Teachers: A National Challenge.* Washington, D.C.: National Governors' Association.

Bastian, Ann. 1989. "School Choice: Unwrapping the Package." Unpublished paper. New York: The New World Foundation.

Brown, Cynthia G. and Jill Reid. 1987. *Twenty Years On: New Federal and State Roles to Achieve Equity in Education.* Washington, D.C.: National Center for Policy Alternatives.

Brown, Rexford. 1988. "Schooling and Thoughtfulness." Basic Education, Spring. Vol. 3, No. 3.

Carnegie Forum on Education and the Economy's Task Force on Teaching as a Profession. 1986. *A Nation Prepared: Teachers for the 21st Century.* New York: Carnegie Corporation.

Children's Defense Fund. 1989. *A Vision of America's Future: An Agenda for the 1990s: A Children's Defense Budget.* Washington, D.C.: Children's Defense Fund.

Committee on Economic Development. 1987. *Children in Need: Investment Strategies for the Educationally Disadvantaged.* Washington, D.C.: Author.

Council of Chief State School Officers. June, 1989. "CCSSO Activities or School Restructuring for Improved Learning of At-Risk Students." *Concerns.* Issue 27. Washington, D.C.: Council of Chief State School Officers.

Council of Chief State School Officers. "Success for All in a New Century: A Report by the Council of Chief State School Officers on Restructuring Education." Washington, D.C.: Author.

Doyle, P. Denis and Terry W. Hartle. 1985. *Excellence in Education: the States Take Charge.* Washington, D.C.: American Enterprise Institute.

Furhman, Susan. 1982. "State Level Politics and School Financing," in Nelda Cambron-McCabe and Allen Oden, eds., *The Changing Politics of School Finance.* Cambridge, Mass.: Ballinger.

Hodgkinson, Harold. 1986. *All One System.* Washington, D.C.: Institute for Educational Leadership.

Moore, Donald R. and Suzanne Davenport. 1989. *The New Improved Sorting Machine: Concerning School Choice.* Chicago, Illinois: Designs for Change.

National Commission on Excellence in Education. 1983. *A Nation At Risk: The Imperative for Educational Reform.* Washington, D.C.: U.S. Government Printing Office.

National Governors' Association. 1986. *Time for Results: The Governors' 1991 Report on Education.* Washington, D.C.: Author.

Pipho, Christopher. October, 1988. "The Wave Theory of Educational Reform." *Phi Delta Kappan.* Vol. 70, No. 2, pp. 102-3.

CURRICULUM RESOURCES

MONTESSORI CURRICULUM RESOURCES AND SCHOOL IMPLEMENTATION

by Jean K. Miller, Ph.D.

THE PREPARED ENVIRONMENT

OVERVIEWS

ACTIVITY SUMMARIES

MONTESSORI EQUIPMENT SUMMARIES

CURRICULUM SUPPORT MATERIALS

OTHER MATERIALS TO BUY

OTHER MATERIALS TO MAKE

MONTESSORI SUPPLIERS

The Montessori school has a specific curriculum with specific materials which form an interrelated whole with many cross references. The following series of lists and outlines serves several purposes. The introduction to the "prepared environment" establishes a Montessori philosophy and attitude as a way of understanding the psychological use of the materials. The lists describe the necessary equipment needs for any Montessori school. The outlines are not definitive, but they give the non-Montessori trained administrator a sense of curriculum scope and sequence and of the comprehensive nature of the program. The lists of materials provide a minimal expectation of what should be included in a Montessori classroom.

CURRICULUM RESOURCES

THE PREPARED ENVIRONMENT

by Jean K. Miller, Ph.D.

INTRODUCTION

The prepared environment is an important aspect of Montessori. Its purpose is to provide the best possible conditions for the optimum functioning and development of the children for whom it is provided. Montessori is particularly concerned with the optimum development of infants, children and adolescents. Observation of developing human beings within prepared environments in many different countries of the world has enabled Montessorians over the years to develop and refine the concept of the prepared environment in order to better serve the universal needs of children. This increase in awareness of universal needs and the resulting rise in consciousness about how to meet those needs is a never ending process — part of the continuing development which is an outstanding characteristic of the Montessori movement.

UNIVERSAL NEEDS

The universal needs which are to be served by the prepared environment include both physical and psychic needs. Of the two, the physical needs are the most easily delineated. They include food, clothing, shelter, movement in space, self-preservation, and a secure physical territory in which to develop. The psychic needs include culture, belief systems, adornment (by means of which membership with one's social group is achieved), a good self-image, love, and a secure emotional territory in which to develop.

HUMAN TENDENCIES

Human beings are endowed with universal, innate tendencies which serve to satisfy their vital needs. Human tendencies are aided in the fulfillment of the vital needs by the sensitive periods. These periods are times when children exhibit an intense interest in movement, language, order, etc. Human tendencies include movement, orientation, exploration, order, work/activity, exactness, repetition, control of one's own error, self-control, self-perfection, mathematical mind/abstraction, creative imagination, communication, and independence.

Meeting the Needs and Tendencies in the Life of the Child

When considering how these needs and tendencies are to be met in the lives of young children, it is easy to see how the Montessori setting is an addition to, not a replacement of the home. The need for food, clothing and transportation is met primarily by the home, while both places provide shelter and opportunities for movement in space. Defense against disease and various dangers is also a function of both. In the Montessori setting adherence to health laws, a safe environment — secure from intruders — and the establishment of ground rules serve to provide a protective environment for physical development. In the preschool environment the ground rules are set by the teacher while in the elementary classes they are formulated by the children.

Dr. Miller is currently Curriculum Implementor at Greenfield Montessori School in Milwaukee, Wisconsin. She has a Master's and Ph.D. in Education and is a lecturer in Montessori music, certified by A.M.I.

CURRICULUM RESOURCES

The Task of the Child From Birth to Age Six

At birth children have the potentiality of becoming a member of any culture. By the age of six they have become an identifiable member of their culture whether it be American, Asian, European, etc. The task of each child from birth to age six is to construct a human being. In this process of construction children are oriented to their environment in their time, place and culture. Again, the home is the primary source of the raw material for this self-construction by children. The Montessori environment throws light on and thereby helps children to discover and focus on aspects of their societies' culture. For this reason the preschool Montessori environment provides practical life materials appropriate to the culture, uses botanical, zoological and geographical examples from the children's own surroundings and offers the best examples of music, art, etc., so that the children can accomplish this self-construction with the help of the best building materials the culture has to offer. Montessori elementary environments build on that which was begun in the preschool so children are helped to continue their development on a higher level.

Belief Systems

The belief system or religious form which a child's spiritual needs take is determined primarily by the home. Some private Montessori settings address themselves to a particular form.

Nature and Interdependence

Montessori environments should aid children in the development of an awareness, appreciation and sensitivity towards nature, and an understanding of the interdependence of all living and non-living things in the universe.

Clothing

For the younger child, the home determines the type of clothing and adornment which clearly indicate the parents' social group or the social group to which they aspire. Older children show their own taste and social identification by the clothing they select.

Self-Image

The self-image of a child is strongly conditioned by the home. The Montessori preschool works towards strengthening a good self-image by preparing an environment where a child can develop competencies which, in turn, build confidence and independence. These competencies are fostered by parallel and sequential materials which are clearly presented by an adult who has observed the child's needs and level of development. The adult adheres to the adage, "Help by demonstrating and clarifying, not by correcting",[1] in order to protect and preserve the young child's developing feelings of competency. Materials and procedures are provided which foster independence. Various activities in the Practical Life area develop skills in self-care, and the exercises of grace and courtesy give the child confidence in social situations. Built-in control of error in materials makes it possible for children to figure things out for themselves rather than referring to an adult. Of course, if there are too many adults in the environment, the children are tempted to ask for help unnecessarily and remain unduly dependent.

The Importance of Love in the Environment

Love should be an important and powerful reality in any environment. Studies of well-cared-for infants in British orphanages during the Second World War showed that the love of a significant other was necessary for infants to preserve the will to live. Without love, they died. The love of the child for the parent and the love of the parent for the child are necessary for the true inner development of self-control in the child. In the Montessori preschool the environment is prepared with love for the child who will live in it. The

CURRICULUM RESOURCES

love of the teacher for the child is not the same as parental love, nor should it ever try to take the place of parental love. It is instead the love and concern of adults who wish to provide the best possible conditions for the child's optimum functioning and development within the Montessori setting. This care and concern carries over into the environment of the elementary school.

Emotional Climate of the School Environment

There are many ingredients in providing a secure, emotional territory in which children can develop. There is the provision of a safe, physical environment. There is also the intangible quality of the "tone" of the prepared environment which is set by the principal for the whole school and by the teacher for his or her individual classroom. This "tone" may be either positive or negative in relation to the whole group or in relation to individual children. The teacher can choose to address himself or herself to either the best or the worst in any given child and by so doing "feeds" that part of the child. The correct choice for a Montessorian is to provide positive support so that the good within each child can grow and develop. Montessori said, "Never speak ill of a child in his presence or in his absence...," because she understood that even speaking ill of an absent child would set up a feeling tone that would be sensed and responded to by the child when in the presence of those people who harbored an ill opinion of him or her. The prepared environment should support a positive emotional climate among the children by providing essential ground rules, the essence of which is that one is not free to harm oneself or others, or to disturb others or their work. The exercises of grace and courtesy are lessons in positive, social interactions which provide the means for interpreting and carrying out the ground rules in a positive manner.

Exploration

Just as the environment is prepared to meet the universal needs of children, so is it prepared to accommodate the universal tendencies which enable children to fulfill those needs. One of those tendencies is exploration. The environment is set up to enable children to explore various everyday tasks, to explore qualities of materials, to explore language and mathematics, to explore social relationships, etc. The tendency to orient oneself is helped by isolating qualities of things and, on the basis of sufficient experience, crystallizing those qualities with appropriate words. This gives children more possibilities for recognizing and labeling qualities in any environment in which they find themselves. The study of mathematics, geography, botany, etc., also aids children's orientation to the wider environment outside of the Montessori classroom.

Order

The tendency for order allows the human mind to put things into relationships. It is the basis of constructive activity, language, sequential thought and planning. The prepared environment is an orderly environment. Related materials are grouped together and within each grouping is a logical, orderly sequence. Each material has its own place. The external order of the environment provides children with a secure framework. The external environment also helps children develop and become increasingly aware of their internal, mental order. When this has reached a certain level, the external order is no longer so vitally important for children. However, since this happens at different times for different children, the orderliness, intactness, and completeness of the Montessori environment must be maintained, particularly for the sake of the children who still need the external order for the development of their mental clarity. In the elementary class where most children have or will soon have achieved a mental order, the external order is still important for the ease of functioning of the whole class.

Communication

Communication, both verbal and non-verbal, is another tendency of human beings. The prepared environment allows for the free interaction of the children, limited only by the ground rules, and it aids the development of each child's self-expression through many activities and exercises. Various materials isolate parts of the child's language in order to bring clarity to the child's mind concerning the effective use of language.

Abstraction, Creative Imagination, Memory, Mathematical Mind

The human mind has a tendency for abstraction. This requires the exercise of memory, creative imagination, and the mathematical nature of the mind. Specific exercises within the prepared environment which mobilize and thereby aid the development of memory include games associated with the sensorial materials, and commands which gradually increase the number and complexity of actions to be acted out. Imagination is fostered through the acquisition of a fund of real information during the years before six. This fund of facts serves as the basis for a real flowering of constructive imagination after the age of six. The mathematical mind is developed in a logical, orderly way with the help of the Montessori mathematics materials. These materials aid the understanding of various mathematical processes in such a way that the children come to an understanding of the processes themselves — if the materials have been properly presented and if the children are given the opportunity to work with the materials to their satisfaction. Besides building real comprehension, the activities enable the children to memorize many of the arithmetic facts without the feeling of drudgery usually associated with this task.

Repetition, Perfection, Augmentation

Spontaneous repetition with interest is another tendency which enables humans to take an item or idea and work it over and over until the item will exactly fit its purpose. This repetition is for the sake of perfection, not for the sake of repetition. Within the prepared environment the materials need to be exact so that the quality or concepts they have to reveal will be most readily discernible. Exactness in materials encourages the repetition necessary for this discernment to take place and corresponds to a truly human tendency and need. Incomplete, imperfect, and ill-maintained materials discourage repetition and even prevent choice for many children. While repetition can take various forms in the preschool, during the elementary age it often takes the form of augmentation of the work, rather than simply doing an activity the same way over and over.

Self-Perfection, Evaluation of Work

Moving towards self-perfection is the human tendency that enables the child to work as long as is necessary to approach the goal of perfection in movement or whatever the child needs to perfect. Self-control (the ability to be master of oneself, to do what one needs to do rather than be the prisoner of whims) aids the development of self-perfection while the human tendency to look for a control of error enables the person to realize where performance is less than perfect. During the preschool years, materials and exercises with a built-in control of error, utilized in environments where teachers allow mistakes as much as possible to be a private matter, help children look at mistakes as important pieces of information which they can use to improve their performance without embarrassment. In elementary classes, children meet weekly or biweekly with their teacher for individual conferences in which they are co-evaluators of their own work, thus developing both judgment and a feeling of ownership about their work.

PHYSICAL ASPECTS OF THE ENVIRONMENT

Thus far, the prepared environment has been considered in terms of how it meets the universal needs and tendencies of human beings. Now specific aspects of the environment will be considered.

CURRICULUM RESOURCES

Classroom Size

Ideally the classroom environment should be 1500 square feet. This allows adequate space for the inclusion of all necessary areas as well as adequate space for freedom of movement for a class of 35 children. With fewer children, the shelves may be so arranged to block off extra space. The environment for three to six year olds should feel "homey." Too large a space makes the children feel lost. That feeling undermines concentration and orderly behavior. For elementary classes where the cohesion of the social group is vitally important, rooms that are too large for the number of occupants contribute to a loss of that cohesion.

Classroom Shape

Montessori recommended polygonal rooms — hexagonal or octagonal in shape. The sides of such spaces lend themselves to immediately adjacent, open side rooms and provide much more interest. When that is not possible, square or nearly square rooms are preferred over long, narrow rectangular rooms or a series of rooms where visibility of the whole class is limited or impossible.

Large and Small Motor Control

The environment itself should provide a control for children's movements. If there is no need to be careful, no consequence for careless movement, then there is no need to further refine motor control. Noise dampening flooring such as carpeting, immovable furniture, rubber tipped legs on furniture, and unbreakable objects do not foster this development. The use of furniture that is light in weight, a tile or wood floor and a number of breakable objects call for the development of finer and finer motor control. This is especially important at the preschool level where children are refining and perfecting their movements.

Child-Size Furniture

The furniture and furnishings should, of course, be appropriate in size for the children using them. Stairs should be deep enough so that very young children can step with both feet on each step. The height of each step as well as the height of the banister should be appropriate for children. Door handles should be low and easily manipulated; drinking fountains, sinks and toilets should be of appropriate size and height. Since there are three ages of children in the environment, there should ideally be several sizes of tables and chairs. Bodily discomforts, caused by such things as elbows raised to meet the table or dangling feet that cannot touch the floor, can be critical factors in shortening periods of concentration.

Tables, Chairs and Working Mats in the Preschool

At the preschool level there need not be a table for each child, but tables should be for individual use (not for two or more children). In addition to the individual tables there should be one large circular table which has space for six children, or two semicircular tables, or two trapezoidal tables which may be put together for group work. The latter would provide more flexibility in arrangement. Chairs for the circular table could include three regular chairs and three with arms. The total number of working spaces, counting both tables and working mats, should add up to a few more than there are children in the class. Tables and floor spaces should be interspersed with one another so there is both greater challenge of movement and more privacy available at the work spaces.

Tables, Chairs and Working Mats in the Elementary School

The elementary classroom has the opposite arrangement as far as tables, chairs and working mats are concerned because the children are now very sociable and their discussion of their work is important in aiding the development of the reasoning mind. Therefore, the tables are mainly for groups of two to six children who are working together. A few individual places are available for children who choose to work alone from time to time and for the child who has difficulty concentrating when other children are around. Mats are available for work that lends itself to working on the floor.

Colors of Furnishings

In the preschool classroom, the tables should be painted in attractive colors which easily show dust and dirt and thus invite cleaning by the children. For both the preschool and the elementary, pastel colors provide a pleasing background on which to place the materials, while brightly colored backgrounds, especially intense yellow, cause eye fatigue and thus shorten the period of concentration. Working mats should also be plain colors so that when materials are placed on them the eye naturally rests on the materials and does not have to strain to separate the materials from a busy background. This principle of providing a plain background so that the materials stand out should be followed in the walls, shelves, flooring and even in the clothing selected by the adult who will be demonstrating materials. Soft, muted colors in the furnishings, floor, walls and ceilings promote a feeling of calmness and relaxation. Since bright colors are contained within the materials, the materials are what attract the eye and focus the attention of the children.

Wooden Furniture

Wooden furniture and shelving are much preferable to metal and laminated plastic. The latter gives a very harsh feeling to the room while wood contributes a warmth to the ambiance of the environment. Wood also provides increased opportunities for the child to become involved in its care.

Lighting

Natural lighting is much preferred to artificial. When artificial lighting is necessary, it is best not to have florescent lights. The steady buzz contributes to fatigue and the rapid flickering and glare causes headaches in some people. If florescent lighting is required by state or local regulations, then use "full spectrum" light bulbs so that all the colors in natural lighting will be present. The best solution is, of course, to have adequate window space to let in natural light. The windows should be low enough so that the children may have a view of the outdoors.

Display of Materials

"The cupboards and shelves should...be placed so as to give prominence to certain materials. Some of them, for instance the pink tower, the broad stair, the long rods and the number rods, deserve a special place which makes them stand out."[2] The materials on the shelves should be arranged in such a way that there is a clear delineation between one material and the next. This means that the shelves may not be too crowded with materials and that the materials must be neatly arranged, not one on top of or behind the other. The shelves should be low enough so that the children may reach the materials without difficulty. Since materials are to be taken from the shelves for use, the bells and the tone bars, which are usually to be played where they are displayed, should be on their own special cabinet which is clearly not a shelf.

Plants

Living plants are to be included in the prepared environment. Some of the plants should clearly illustrate the parts of a plant, while the leaves of various plants should provide living illustrations of forms in the leaf cabinet. Flowering plants provide means to study the parts of a flower, different forms of corollas, etc. Real experience with live plants precedes the nomenclature material for the study of plants.

CURRICULUM RESOURCES

Animals

The same is true for animals. Real experience with live specimens precedes work with the nomenclature cards. There should be animals to represent each of the five classes of vertebrates (fish, amphibians, reptiles, birds and mammals), as well as representatives of the phyla of insects. If the classroom environment is small, all of these animals and insects need not be in the environment at the same time. Provision for proper maintenance may be made by including such environments as an aquarium, aquaterrarium, terrarium, insectarium, etc.

Display of Children's Work

A display could be available so that the children can share their work if *they* choose.

The "Line" For Movement

The prepared environment should include a line on the floor large enough so that all the children can walk, march, skip or run together on it in time to musical accompaniments. There should be long straight sections going the length of the environment. The ends of the long sections may be connected by a gently curving line, never by broken straight lines. If necessary, the line may wind around permanently fixed obstacles such as shelves; however, the turns should not be too abrupt for rapidly moving children to maneuver safely. In the preschool class a smaller ellipse may be provided inside the larger line for the smallest children who tend to walk very slowly at first. For both preschool and elementary classes it is important to remember that the line is for movement, it is *never for sitting.* The line itself need not be wider than three quarters of an inch and it must be a soft color for it is to be only a faint indication of where the feet are to go, rather than a visual distraction in the room.

Whole Class Meetings

In the preschool there need not be an area in the room where the whole class can sit down together. If this is needed, the environment is rearranged for this temporary purpose with the help of the children. Elementary children do need to sit together for class meetings, discussions, reports, etc. There may be an open area for this purpose, or the furniture may be rearranged as necessary.

Delineation of Work Space

The prepared environment provides children with clearly delineated work spaces as another way to aid concentration. The edges of the table tops and of the work mats show the areas within which the materials are to be contained and thus give focus to the children's concentration. Wall to wall carpeting does not facilitate this kind of delineation as a working mat on top of a carpet does not make as clear a definition of the work space as does a working mat on a wooden or tile floor.

Mirrors

To help the children develop a concept of their own bodies and as a means to support self-care, a full length mirror could be provided as well as several smaller mirrors, each of which may be used in various grooming exercises.

Optimum Visual Stimulation

The overall appearance of the room should express Montessori's stress on limitation to what is necessary and sufficient. Too many things in view fractures concentration, too few things fail to stimulate interest. Displays on walls should be limited to one picture or object for each section of a wall and should isolate one thing at a time, e.g., one composer, one reproduction of a great painting, one piece of sculpture, one picture from nature, etc. These beautiful artifacts, prints, etc., should be at the children's eye level and should be rotated periodically. Alphabet cards, with or without pictures, balloons, clowns, etc., should *not* be placed on the walls.

Environmental Assistance for Self-Development

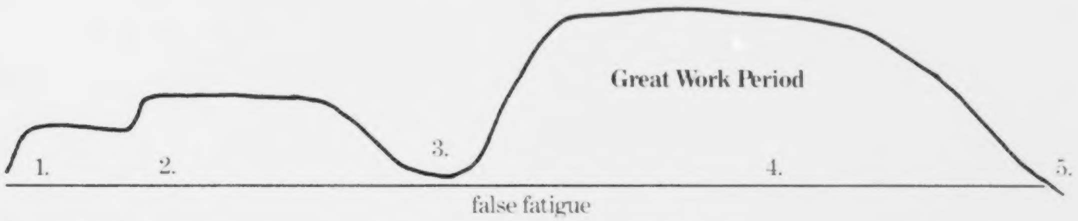
E. M. Standing sums it up very well: "In this environment only those things are allowed to be present which will assist development. Out of it must be kept anything that would act as an obstacle — not least a too interfering adult. Even such things as are neutral or irrelevant should be rigorously excluded. The constructive psychic energy granted by nature to the child for building up his personality is limited; therefore we must do everything we can to see that it is not scattered in activities of the wrong kind."[3]

ELEMENTARY ENVIRONMENTS AND THE PURSUIT OF KNOWLEDGE

The environment of the elementary class is not confined to the school building. One of the important activities of the elementary age is research on a variety of topics. The resources available for this research in the classroom are deliberately restricted so that the students will have to go out of their classroom to find more. The school library must also prove to be incomplete so that there will be a reason to search further. Children may go in small groups with a responsible adult to a public library, a museum, a courthouse, etc., to get the information they desire. They also go out of the building to get supplies for special projects, food or other necessities for animals and plants in their classrooms, etc. The more they stretch themselves to get the information or supplies they need, the more enjoyable it seems to be. Not only do the students learn how to find the information they want, they also associate good feelings with this pursuit of knowledge.

THE TIME ENVIRONMENT – THE WORK CYCLE

One of the interesting aspects of Montessori education is that Montessori set up an environment for children in which they revealed characteristics which did not appear under other circumstances. One of these characteristics is the ability to work for long periods of time in concentrated activity. For this to occur, it is necessary that there be a minimum of three hours of unbroken time. The following illustration of a work cycle shows a "primitive curve of ordered work" during a class session that lasts three hours.



The straight line, which represents the three hours, is a base line of no activity. The line above illustrates the length and depth of involvement in constructive activity. The numbered comments below correspond to the numbers in the illustration.

1. Many children will enter the class and choose something relatively simple and stay with it a short time, almost as if they are re-establishing feelings of competence.
2. Their next activity is generally more difficult and they stay with it longer.
3. This is followed by "false fatigue," a time when many children have put their work away and have not as yet selected another activity.
4. If the teacher allows the children to take the time they need to experience the restlessness of the false fatigue, they will soon settle into their most difficult work choice of the cycle and stay with it the longest

period of time. During this time their concentration is the deepest and they make the greatest strides in the development of skills and in the acquisition of knowledge. Montessori called this the great work period.

5. As the cycle nears its completion, the children put away their work and they appear to be refreshed and relaxed as they talk with one another.

When the time available is less than three hours, the great work period does not occur and the work cycle does not complete itself. To protect themselves from the frustration of having their great work period interrupted, the children either do not choose any work after the false fatigue or they choose something that involves only superficial involvement.

Teachers who are faced with a time frame that does not allow for a full work cycle in the preschool, generally respond by shortening the children's work time to the approximate length of time that occurs before false fatigue. This is achieved by having the children begin and end the class session with long group times. Montessori believed that children of this age learn best through individual work that involves the sensorial manipulation of objects; therefore, these large group times do not follow Montessori principles. In addition, children who have difficulty sitting still may begin to feel like failures because they cannot manage those long group times.

In the elementary class, children unable to finish their work cycle may exhibit their frustration by showing an unwillingness or a disappointment in having to put their work away.

For additional information on the Work Cycle, see *Spontaneous Activity in Education* by Maria Montessori, pp. 96 to 110.

THE CURRICULUM AS A CONTINUUM IN RELATION TO INDIVIDUAL ACHIEVEMENT

In describing the activities and materials of the Montessori preschool and elementary levels, it is difficult to draw a distinct line between them. First, all the various parts of the curriculum (which are interrelated) are part of a continuum. Second, even under ideal Montessori circumstances, there is still a great deal of variation in the achievements of children, all of which fall into a normal range. Part of the Montessori philosophy is that children are treated as individuals and are not compared to each other. Some factors which affect achievement are listed below:

1. Age of child entering Montessori. Children entering at age five will miss most of their sensitive periods for certain kinds of development and will, therefore, not achieve as close to their potential for development as a child who enters between the ages of two and one half and three.
2. Consistency of attendance
3. Training of the teacher
4. Willingness of the teacher to do Montessori
5. Length of school year
6. Length of school day
7. Age at which children begin to stay all day (age 5 at the latest)
8. Environments used for one group of children per day (no double sessions)
9. Protection of the work cycle from interruptions and time encroachments. (See description of the work cycle above.)
10. Willingness of the administration to allow the conditions necessary for Montessori to happen.
11. What the child brings to the situation. A child who comes from a home situation where the language used is not the same as the language used at school will be "at a disadvantage" as will the child who comes from a home situation that is unstable, chaotic or abusive. The earlier these children begin Montessori and the longer they stay in Montessori, the more chance there is that Montessori can make a difference.

Whatever level of achievement has been reached by a child at any given time is the right level for that child, given the circumstances of his or her life and the conditions which existed in the class or classes

CURRICULUM RESOURCES

previously attended. It is important to take each child where he or she is and to help him or her progress onwards from that point. Using labels, such as "remedial work," will only make the children feel that they are inadequate. Since children are very good at fulfilling the "prophecies" projected upon them, this could jeopardize their future achievement because they may come to believe that they are low achievers.

The following pages give a short introduction to the various areas found in Montessori classrooms and a listing of the materials necessary for equipping a classroom.

FOOTNOTES

1. *Errors and Their Correction* by A. M. Joosten (out of print)
2. *The Environment, Its Arrangement and Maintenance and House of Children, Its Function and Requirements* by A. M. Joosten (out of print)
3. *Maria Montessori: Her Life and Work* by E. M. Standing, page 267, Mentor Books

PUBLICATION SOURCES

The Absorbent Mind by Maria Montessori, Kalashetra Publications Press, Madras
The Discovery of the Child by Maria Montessori, Kalashetra Publications Press, Madras
The Secret of Childhood by Maria Montessori, Kalashetra Publications Press, Madras
The Montessori Method by Maria Montessori, Schocken Books, New York
Spontaneous Activity in Education by Maria Montessori, Schocken Books, New York
The Human Tendencies and Montessori Education by Mario M. Montessori, Association Montessori Internationale, Amsterdam
Maria Montessori: Her Life and Work by E. M. Standing, Mentor, New York
Errors and Their Correction by A. M. Joosten (out of print)
The Environment, Its Arrangement and Maintenance by A. M. Joosten (out of print)
The Montessori House of Children, Its Function and Requirements by A. M. Joosten (out of print)

LECTURE SOURCES

Eleanora Honegger, Centro Internazionale Studi Montessorianni, Bergamo, Italy
Margaret E. Stephenson, Washington Montessori Institute, Washington, D.C.
Mary Raudonis, Montessori Institute of Cleveland, Cleveland Heights, Ohio

PRACTICAL LIFE

CURRICULUM RESOURCES

PRACTICAL LIFE

INTRODUCTION

Practical life is the first area children see when entering the Montessori preschool classroom. The materials and activities of the practical life area, which are already familiar because many of them are seen at home, help children make the transition from home to school. Practical life is divided into five areas:

- Preliminary exercises help prepare the children to function independently in the classroom.
- Exercises for care of the person help children gain independence in their self-care.
- Exercises for care of the environment help children gain independence in the environment.
- Exercises of grace and courtesy (social relations) provide lessons on how to interact with others in one's culture.
- Control of movement exercises help children gain conscious control of their movements.

Qualities of Practical Life Materials and Exercises:

- The materials must be an appropriate size for children.
- The materials and exercises must be appropriate for the culture in which the child lives.
- The materials are color coded and placed on shelves. The color coding gives a clear indication of which items belong together in the exercise. The spacing (not crowding) on the shelves provides for visual separation of materials for different exercises. Because it is easy for the children to get the materials they need by themselves, this facilitates the development of independence.
- The materials must be attractive so that children are enticed to use them. In addition to being aesthetically pleasing, they must be clean, complete, and in perfect repair.
- The materials must be real rather than toys.
- The materials must have an observable application within the classroom environment. This is a very important, subtle psychological point. Sooner or later the child will see that this work is purposeful and has dignity. Practical life activities are not "make-work" projects or time fillers. Rather, practical life is real work and, as such, is an aid to life.
- Some materials must be breakable so that there is a reason to move carefully and thus develop greater control over one's movements.

Many materials and exercises will fulfill the above criteria. Others will not. An exercise that has children placing dress makers' pins in the holes of a salt shaker or one where children use tweezers to place beads on the small suction cups of a soap holder do not fit because these are not activities that we do in this culture and they have no observable purpose in the classroom environment. These are examples of "dead-end" time fillers.

Demonstrations of the exercises are given slowly and deliberately so that the children have the possibility of seeing and absorbing the movements. In preparation for the demonstrations, the teacher must analyze all the essential and minimal movements in an exercise and practice them extensively. When the teacher has a thorough knowledge of an exercise, he or she is free to focus on the child's response. The teacher is, therefore, more able to adapt the presentation in an appropriate manner to that individual child.

CURRICULUM RESOURCES

Purposes of the Practical Life Exercises:

Development of problem solving skills. This is done through exercises that give children the opportunity to work in an orderly, sequential way with materials which form a complete whole in themselves. Some evidence seems to suggest that cognitive style is set by the time the child turns four years of age. If this is so, then help in its formation needs to come before that age. The practical life exercises help children develop a cognitive style for approaching complex tasks. They give both "global" and "linear" style thinkers something to which they can attach themselves in any given exercise and the opportunity to strengthen the other style of thinking through interaction with the materials.

Coordination and refinement of movement. Carrying and manipulating the materials provides for ever increasing precision of movement which benefits both large and small motor coordination.

Concentration and increased complexity of tasks. The exercises proceed from simple to complex, or from exercises with few steps to exercises with many steps. This progression leads from short tasks which may be repeated over and over to tasks which take much longer to complete. This prepares children for academic work with many, complex steps which require that the children be able to concentrate for a relatively long period of time in order to bring the task to a successful conclusion.

Independence. The activities are designed to help free children from dependence on adults. The ability to make a choice of one's activity is part of being an independent person. This is a skill that grows over time.

Positive self-image. Confidence in oneself and one's abilities is built naturally with practical life activities for there are, almost literally, no wrong ways to do them, only better and better ways.

Increased social responsibility. Completion of the exercise is part of the practical life routine. The exercise is complete when it has been put back in its place on the shelf and has been made ready for the next person. In addition to establishing the habit of completing one's tasks, it helps to develop consideration for other members of the class.

Willingness to accept a new challange. "Points of interest" within a particular exercise are designed on the spot by the teacher to fit the needs of a particular child. The teacher must assess the child's performance on a task, pick one aspect that could be improved (making sure that it is within the child's capabilities), and then present it in an enticing manner. "This time when you wash the table, let's see if you can do it with no drips coming off this side of the table." The "points of interest" help children become more conscious, and, therefore, more in control of their movements.

Improved judgement. The exercises of practical life help children build up judgement and unify their physical and mental energies. The result is harmony and joy. These exercises provide the foundation on which the rest of the activities in the environment are built.

Initially, children engage themselves in the exercises of practical life for the pleasure that comes from performing the activities. As the children mature and become more and more aware of the little society that exists in their classroom and their responsibility to be a contributing member of that society, they begin to do these exercises for the sake of the class and that society. For example, a younger child may have spilled a large quantity of water on the floor. Children who have arrived at this new level of social consciousness come to the child's aid and help mop up the spill.

During the elementary years, children engage in a general cleaning of the room and the materials, and in making order as part of their responsibility to their classroom society. At first, the tasks that need to be done are decided upon by the class as a whole and the responsibility is divided among the class members. How often the assigned tasks change is, again, a decision that is made by the class. Sometimes a class will arrive at the highest level of responsibility which is keeping the class clean and in order without assigned tasks.

Jean K. Miller

PRACTICAL LIFE FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. PRELIMINARY EXERCISES

- Preparation for Using Water:
  - Operating a Faucet
  - Pouring Rice:
    - pitchers, small, glass
    - rice, long grain
    - tray, small, colored (5"x7")
- Exercises for Using Water:
  - Pouring Water:
    - cloth, small
    - containers, small - different shapes & sizes
    - cup and saucer, small
    - funnel
    - glass, small
    - markers to indicate plant has been watered
    - pitchers, small glass
    - plants
    - sponge, small
    - tray, small (5" x 7")
    - vases, clear, opaque
    - watering can
  - Filling a Pitcher:
    - pitchers, glass, beautiful
    - pitcher, heavy, metal
  - Etc.
- Exercises in Carrying:
  - Carrying a Chair
  - Carrying a Table
  - Carrying Apparatus
  - How to Carry, Roll and Unroll a Mat:
    - 1.640.00-1.644.00 carpets (red, green, blue, gray, brown)
    - 1.650.00 stand for 5 carpets
  - Carrying Sharp Objects:
    - 7.701.00 scissors w/rounded point 10.4 cm
    - 7.708.00 six scissor storage block
    - knives
    - Etc.
- Exercises for Polishing:
  - Making a Cotton Applicator
  - Operating a Dropper
  - Etc.
- Exercises in Opening and Shutting:
  - Doors
  - Windows
  - Boxes
  - Bottles and jars
  - Etc.
- Exercises in Folding:
  - Napkins
  - Dusters
  - Towels
  - Etc.
- Exercises in Cutting:
  - Scissors and Paper
    - 5.678.00 cutting exercise sheets
    - 7.701.00 scissors w/rounded point 10.4 cm
    - 7.708.00 six scissor storage block
  - Knives with Rounded Points
  - Etc.

II. CARE OF THE PERSON

- Dressing and Undressing (dressing frames)
  - 0.001.00 buttoning frame, small buttons
  - 0.002.00 buttoning frame, large buttons
  - 0.003.00 bow tying frame
  - 0.004.00 lacing frame
  - 0.005.00 hook and eye frame
  - 0.006.00 safety pin frame
  - 0.007.00 snapping frame
  - 0.008.00 zipping frame
  - 0.009.00 buckling frame
  - 0.010.00 shoe buttoning frame
  - 0.011.00 shoe lacing frame
  - 0.012.00 velcro closure frame
  - 1.632.00 stand for dressing frames
- Polishing Shoes:
  - 4.009.00 dust/polishing cloth
  - 4.014.00 shoe polishing brush set (Also included in 4.027.00)
  - 4.047.00 basket for shoe polishing
    - applicator
    - apron
    - basket
    - brush, soft, hard
    - buffer
    - cloth, duster
    - paper, large, white
  - polish: black, brown, neutral
- Combing Hair:
  - chair
  - comb for each child
  - dressing table with mirror
  - wall hanging case to hold combs
  - waste basket
- Washing Hands:
  - 4.013.00 nail brush
  - basin, glass
  - dish, small
  - fingernail brush
  - pitcher, glass
  - soap dish
  - soap
  - sponge, small
  - towel, small, hand
  - tray
- Hanging Up Clothes:
  - clothes hanger or clothes rack
- Checking Overall Appearance:
  - full length mirror
- Etc.

III. CARE OF THE INDOOR ENVIRONMENT

- Folding:
  - basket or tray in which cloths may lie flat
    - 4 square cloths with stitching, approximately 10x10" or 12x12"
- Dusting:
  - 4.009.00 dust/polishing cloth
  - 4.010.00 basket for dusters
  - 4.011.00 dust brush, soft
  - 4.042.00 dust brush, hard
  - apron
- Washing a Table:
  - 4.005.00 floor cloth
  - apron
  - basin, circular
  - brush, small, scrubbing
  - pail with spout and handhold underneath
  - soap dish
  - soap, small piece
  - sponge, small
  - two quart pitcher
  - wash cloth for drying
- Polishing a Table:
  - apron
  - basket
  - caster or butter pat dish
  - cloth for applying polish
  - cloth for rubbing in the polish
  - cloth for final polishing
  - place mat
  - polish
  - polish dispenser, small
  - spoon, small
- Polishing Metal:
  - 4.033.00 set brassware, containing 8 different miniatures *(Items for polishing must be used elsewhere in the room. They do not sit with the materials for polishing. The items in this set could have a decorative function.)*
  - 4.034.00 Brasso brass polish
  - apron
  - basket
  - brush, small
  - cotton balls
  - dish, small
  - metal polish (glass wax)
  - objects to polish
  - oilcloth
  - orange stick
  - polishing cloth
- Polishing Silver:
  - apron
  - basket
  - butter pat dish
  - cloth, small
  - cotton balls
  - dispenser bottle
  - oilcloth
  - orange stick
  - silver polish
- Sewing:
  - 7.701.00 scissors with rounded point 10.4 cm
  - 7.708.00 six scissor storage block
  - basket
  - buttons
  - cloth
  - container to hold buttons
  - needle
  - pin cushion
  - thread
- Sweeping:
  - 4.027.00 stand, practical life material, complete (shoe polishing brush set, 2 brooms, floor mop, rug beater, dust brush, dustpan)
  - confetti or sawdust
  - container for chalk
  - container for confetti or sawdust
  - sponge, small
  - tray
- Arranging Flowers:
  - 7.701.00 scissors with rounded point 10.4 cm
  - 7.708.00 six scissor storage block
  - apron
  - basin
  - bucket
  - doilies, paper
  - drying cloth
  - funnel
  - oilcloth
  - pitchers:
    - medium sized
    - large
  - sponge
  - trays
  - vases
- Washing Cloths:
  - basin:
    - circular
    - rectangular
  - basket for cloths
  - clothes pins and line or drying rack
  - pail with pouring lip and hand hold
  - pitcher
  - oilcloth
  - scrub board
  - soap
  - soap dish
- Ironing:
  - ironing board
  - iron
- Preparing Food:
  - apron
  - bowl
  - brush, vegetable

- chopping knife
- cloth, small
- cutting board
- potato peeler
- small sponge
- small cloth
- towel
- trays

Setting a Table:
- dishes
- flowers
- glasses
- napkins
- pitcher
- silverware
- table cloth
- vase

Clearing a Table:
- same as for setting a table

Crumbing a Table:
- crumber set

Etc.

IV. CARE OF THE OUTDOOR ENVIRONMENT

Sweeping Steps:
- 4.027.00 stand, practical life material, complete (shoe polishing brush set, two brooms, floor mop, rug beater, dust brush, dustpan)
- trash receptacle

Picking Up Debris In The School Yard:
- trash bags
- trash container

Raking Leaves:
- container or compost pile for leaves
- rake

Planting Flowers, Vegetables:
- fertilizer (organic preferred)
- garden tools
- seeds

Etc.

V. EXERCISES OF GRACE AND COURTESY

- Blowing one's nose
- Covering one's mouth for a sneeze or cough
- How to yawn
- Opening a door to receive someone and inviting them to come in
- Shaking hands
- How to talk softly but audibly
- Offering an object to someone
- Passing an object from one person to another
- How to ask for something
- How to accept
- How to refuse
- Thanking someone
- Accepting thanks
- Excusing one's self
- How to apologize
- Passing behind so as not to disturb others
- How and when to interrupt
- Sitting down
- Standing up
- Etc.

VI. CONTROL OF MOVEMENT

Walking on the Line

(Note: The line is to be an unobtrusive indication of where to put the feet. It should be no more than three quarters of an inch wide and should be a color which almost blends into the floor. A light tan is preferable. Initially, the line is for walking. Later it is for marching, running, skipping, etc., in time to appropriate music. Therefore, it should be as large as the room permits it to be. Since it is for movement, the children should not associate it with the sedentary activity of sitting.)

Silence

PRACTICAL LIFE FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.001.00	buttoning frame, small buttons
0.002.00	buttoning frame, large buttons
0.003.00	bow tying frame
0.004.00	lacing frame
0.005.00	hook and eye frame
0.006.00	safety pin frame
0.007.00	snapping frame
0.008.00	zipping frame
0.009.00	buckling frame
0.010.00	shoe buttoning frame
0.011.00	shoe lacing frame
0.012.00	velcro closure frame
1.632.00	stand for dressing frames
1.640.00	red carpet (2) (see language)
1.641.00	green carpet (2) (see language)
1.642.00	blue carpet (2) (see language)
1.643.00	gray carpet (2) (see language)
1.644.00	brown carpet (2) (see language)
1.650.00	stand for 5 carpets (2) (see language)
4.005.00	floor cloth (5)
4.009.00	dust/polishing cloth (2)
4.010.00	basket for dusters
4.011.00	dust brush, soft
4.013.00	nail brush
4.014.00	shoe polishing set (also included in 4.027.00)
4.015.00	small dust brush
4.027.00	stand, practical life material, complete (includes stand, dustpan, broom, etc.)
4.033.00	set brassware, containing 8 different miniatures
4.034.00	Brasso brass polish (2)
4.042.00	dust brush, hard
4.047.00	basket for shoe polishing
5.678.00	cutting exercise sheets
7.701.00	scissors with rounded point - 10.4 cm (12)
7.708.00	six scissor storage block (2)

PRACTICAL LIFE FOR THE PRESCHOOL

OTHER MATERIALS TO BUY

In addition to the materials available from Nienhuis, the Montessori manufacturer, Practical Life materials are available from:

- aprons, various sizes, fabrics & colors with various fasteners
- basins, various colors and shapes
- baskets, various sizes and shapes
- bowls, various sizes
- brushes:
    - hard, for shoes
    - scrub
    - soft, for shoes
    - other sizes, shapes and degrees of firmness
- buffer, for shoes
- buttons in container
- caster or butter pat dish
- chopping knife
- container for chalk
- cloths, small, various colors
- comb for each child
- confetti or sawdust in container
- containers, different shapes and sizes
- cotton balls
- cutting board
- cup and saucer, small
- dish, small
- dust cloths
- finger nail brush
- floor cloths, various sizes and colors
- folding cloths
- funnel
- glasses, various sizes
- handkerchief
- markers to indicate plant has been watered
- mirrors:
    - full length
    - vanity
- needle
- oilcloths, various colors
- orange sticks
- pails w/ spout & handhold underneath, various colors
- paper doilies
- paper, large, white
- place mats, various colors
- plants
- pin cushion
- pitchers:
    - beautiful glass
    - heavy metal
    - small glass
    - two quart
- polish dispenser, small
- polish, various kinds, as non-toxic as possible *(Not to be used by children who still put things in their mouths.)*
- potato peeler
- rice, long grain
- scissors
- scrub board
- shoe polish:
    - neutral
    - brown
    - black
- soap
- soap dishes, various colors
- sponges, small, various colors
- spoons, small
- tissue
- thread
- towels, various sizes and colors
- trash bags
- trash container
- trash receptacle
- trays, various sizes and shapes
- vases:
    - clear
    - opaque
    - etc.
- vegetable brushes
- wall hanging case for combs
- wash cloths, various colors
- waste baskets
- watering can

SENSORIAL

INTRODUCTION

All children, no matter what their background, have accumulated thousands of sensory impressions by the time they enter a Montessori environment. The purpose of the sensorial materials available in the Montessori classroom is to help them sort out, clarify, and classify those impressions. In order to do this the sensorial materials have special qualities which are important and should be used to guide the selection of materials when equipping a Montessori environment. Those, along with some of the other qualities of the sensorial materials, are listed below.

Isolation of the Concept — Each sensorial material isolates only one quality or concept. Therefore children focus on one idea at a time, manipulate the concrete representation of that idea, abstract it and then, finally, apply the concept in other situations. It is important that the materials truly isolate a concept. For example, the pink tower must be a solid color rather than natural wood. The solid color enables the children's eyes to focus on the shapes of the pieces and their relationships to one another. A tower whose finish reveals the natural wood provides a distraction in that the wood grain draws attention away from the shapes and their relationships.

Aesthetic Beauty — The beauty of the material invites use by the children.

Precision — The materials must be precise in order that the shapes and their relationships reveal themselves to the children and their interrelationships may be discovered (e.g., the corresponding dimensions of the pink tower and the broad stair).

It is important to maintain the aesthetic beauty, completeness, and precision of the materials. This is done first through the modeling of careful handling on the part of the adult in the environment, second through insisting that the children handle all materials carefully, and third, through touch-up painting as necessary. (Item O.321.00, First Aid Kit, contains extras of the most often lost pieces of material. Items 9.500.00 through 9.509.00 are touch-up paints.) When materials have lost their precision and aesthetic beauty and it is no longer possible to repair them, it is time to purchase new ones. Schools should have a category in their budget for replacement of materials. The frequency of replacement will depend on the standard of handling set by the adults in the Children's House environments. Items incorporating absolute precision (pink tower, broad stair, red rods, red and blue rods, binomial and trinomial cubes) should not need to be replaced more often than every five years. Usually they will last much longer — but only with careful, respectful handling.

Limited in Number — Since the purpose of these materials is to help children clarify and classify the sense impressions they already have rather than introduce them to new ones, it is important that the materials be limited in number. If there are too many materials their very quantity will obscure the clarity sought by the children. If there are too few, areas where clarity is needed will be skipped. The materials listed in this section represent an amount that is just right for a Montessori preschool class.

Systematic — Each material builds on the concepts discovered in previous materials (i.e., primary colors are given first, secondary colors next, followed by tints and hues.)

Designed For Auto-Education — The materials act directly on the child and the child acts directly on the materials. Once a child knows how to use a material, he or she is free to work without the teacher, to explore and to discover what is inherent in that material. Since there is nothing extraneous or superfluous in the material, there is only the essence of the concept waiting to reveal itself to the child.

CURRICULUM RESOURCES

Control of Error – There are three different kinds of control utilized in the sensorial materials. The first is within the material itself. A perfect example is the cylinder blocks where each cylinder will fit precisely into only one hole in its block. The second is within the child. For example, from the first day a child enters a Montessori preschool class he or she sees and absorbs the regular seriation of the pink tower. When the child is introduced to the use of the pink tower, he or she has already built an internal guide which helps the child "know" when the tower has been built correctly. The third control is in the adult or another child. This is used when the child is unable to detect his or her error or lack of knowledge. A good example of when outside help is needed is for naming the geometric solids.

Jean K. Miller

SENSORIAL MATERIALS FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.012.A0	rough and smooth boards
0.014.00	rough and smooth tablets
0.014.B0	empty box for fabrics (3)
0.015.00	smelling bottles
0.016.00	sound boxes
0.017.00	baric tablets
0.017.A0	blindfold (6)
0.018.00	thermic bottles
0.018.A0	thermic tablets
0.019.00	cylinder block (increase in height and diameter)
0.020.00	cylinder block (increase in diameter, height constant)
0.021.00	cylinder block (decrease in height, increase in diameter)
0.022.00	cylinder block (increase in height, diameter constant)
0.023.00	knobless cylinders
0.024.00	pink tower
0.025.00	broad stair
0.026.00	red rods
0.037.01	geometric cabinet (empty)
0.037.02	contents, geometric cabinet
0.038.00	demonstration tray for geometric cabinet
0.038.A0	contents, demonstration tray
0.039.00	cards for geometrical cabinet
0.040.00	cabinet with 6 compartments for the cards or
0.040.A0	box with 3 compartments for geometric cards
0.040.A0	box with 3 compartments for the botany cards
0.041.A0	botany cabinet (empty)
0.041.A1	contents of botany cabinet
0.043.00	leaf cards
0.044.00	cabinet with 3 compartments (for leaf cards)
0.045.00	squares, circles, triangles for superimposed figures
0.048.00	geometrical solids
0.048.A0	bases for solids
0.048.B0	basket for geometrical solids (2)
0.049.00	constructive triangles
0.051.00	color tablets, box 1
0.052.00	color tablets, box 2
0.053.00	color tablets, box 3
0.063.A0	bells (26) with 2 mallets and 1 damper (see music)
0.063.B0	two keyboards for bells (see music)
0.063.C0	wooden staff board with circles for the notes (see music)
0.063.D0	two wooden staff boards (see music)
0.063.E1	box with musical signs (see music)
0.063.F0	bell striker (3) (see music)
0.063.G0	bell damper (see music)
0.064.00	music strip boards (see music)
0.131.00	binomial cube
0.132.00	trinomial cube
0.186.00	table of Pythagoras
0.321.00	first aid kit (replacement pieces) (one/school)
1.615.00	cabinet for bell material
9.500.00	pink touch-up paint
9.501.00	red touch-up paint
9.502.00	yellow touch-up paint
9.503.00	green touch-up paint
9.504.00	dark blue touch-up paint
9.505.00	clear touch-up varnish
9.506.00	thinner for repair paint
9.507.00	brown touch-up paint
9.508.00	black touch-up paint
9.509.00	light blue touch-up paint

SENSORIAL MATERIALS FOR THE PRESCHOOL
OTHER MATERIALS TO BUY OR MAKE

bowl, small
cups, small
fabrics
grains of different kinds
jars for tasting (10)
mystery bag with selection of objects
pitchers
spoons
towel, terry cloth, small
trays

CURRICULUM RESOURCES

LANGUAGE

INTRODUCTION

Language is an important part of the entire Montessori curriculum. Its treatment as a separate subject comes only at the points at which it is necessary to give clarity to the children's minds — that is, to give them conscious awareness of their language so that they may be able to use it more effectively. Once children have an understanding that writing is a graphic form of their language and are secure in using written symbols themselves, these special points center around spelling, word study, penmanship, grammar, punctuation and capitalization. The real experience in reading and writing comes through the children's work in other areas of the curriculum such as geography, history, botany, etc. In the elementary, overviews of curriculum are given through the use of the "Great Lessons." The Great Lessons provide a framework to the information the children gather as they read and research various topics of interest to them. The Great Lessons enable them to see relationships among the various pieces of information and how those pieces fit into the overview and lend excitement and interest as they discover more and more about the world through the integrated curriculum. Language is a tool for these discoveries. This is very different from the basal reader approach where expository reading selections present disjointed pieces of information and contrived stories, used to meet a particular skill, which has little or no redeeming literary value.

If the various aspects of language are made available to children at the appropriate sensitive periods, those aspects are eagerly seized upon and studied with fervor. If they are presented later, there is less interest, and more ingenuity must be employed to make the information attractive to children. Before age six, children enjoy the study of language for its own sake. Elementary age children want language as a tool — both for self-expression and for obtaining the information they want.

When language is properly approached in the Montessori preschool, writing usually comes before reading. Preliminary exercises help the children acquire the components necessary for writing to take place: control of pencil through work with the geometric forms of the metal insets; lightness of touch through work with the sandpaper touch boards and the sandpaper letters; association of sound, symbol and the muscular motions necessary for producing the symbols through work with the sandpaper letters; and practice in word analysis with the cutout pieces of the moveable alphabet. Children combine all of these in their own way and in their own time when they begin handwriting. They may write for several months before discovering that they can read back their own writing. This leads to the realization that they can read other people's writing. Reading is thus attained through the children's own creative writing.

When children age five or older approach reading and writing for the first time, the two phenomena generally occur simultaneously. It is important that the children be given the opportunity to establish the habit of expressing themselves in writing. This is a delicate process during which the teacher must refrain from correcting the children's work as they become comfortable with written expression. Invented spellings, lack of punctuation and capitalization are fine at this stage. At the appropriate moment the study of spelling and grammar follows, as does word study and conscious reading. The latter is aided by the use of command cards. Instead of asking children to read aloud, they read a card and then act out the command. It is easy to see if the children have understood what they have read. The commands begin with one word verb commands and progress to sentences requiring one action, then two, then more. They may be done individually or in small groups in the form of charades. The children may also write commands for each other. The addition of adverbs changes the commands into interpretive readings. For example, "Shut the door," may become, "Shut the door happily," or "Shut the door fearfully." This may progress into little dialogues, small plays and, finally, big productions. The latter may be taken from good literature and adapted by the children, or they may illustrate something the children are studying, such as the crossing of the land bridge from what is present-day Russia to Alaska by the original inhabitants of North America, the re-establishment of the boundries of farmer's fields through the use of geometry after the annual flooding of the Nile River, or any other theme the children may wish to dramatize.

Classified nomenclature or vocabulary study in written form within other areas of the curriculum may begin as soon as a child knows the sounds of individual letters. The child has already worked with these vocabulary cards in a verbal naming process so the names for the objects pictured are already a part of his or her speaking vocabulary. The three-period lesson may be used to introduce the written words to the child. When the child works alone, he or she may sound out the initial letter of a word and intuit the rest of the word according to the accompanying picture. This material is prepared in the usual manner of picture cards, labels, definitions and booklets. It also provides an opportunity for children, who learn more easily by sight than by phonics, to greatly increase their reading vocabulary.

The reading of books follows much experience with reading classification, commands and puzzle words. The first books are simple and short and the subject must be familiar to the child. The child will be able to read these little books one after another, thus deriving a great deal of pleasure in this first encounter with the reading of books. This expands to reading in all areas of the classroom, literature and poetry (including the study of meter), and an introduction to the use of the library and reference works.

The study of grammar begins with the study of individual words, first in an experiential study with games in the preschool and later in a more formal manner in the elementary with the more structured experiential exercises in the grammar boxes. This expands to a study of the functions of groups of words and a specialized study of verbs. Related to this is a study of the child's own style of writing and the style of older authors, comparison of grammatical arrangements of different languages, and an historical study of the development of the language spoken by the children. At some point in the elementary, children begin to use several different grammar texts. Since grammarians do not agree on all classifications of words, lively discussions may result. With this, the children gain experience in gathering the opinions of several grammarians, making up their own minds about a word classification, and then defending their opinion during their discussions with their classmates.

Composition is begun by the children even before they are able to write with pencil and paper. It is done orally first through the practice of logical organization and augmentation with the question game. Written composition begins as soon as they are able to sound out words with the movable alphabet. They may set out their own thoughts with the movable alphabet, first in words, then phrases, sentences, dialogues, paragraphs and stories. Punctuation and capitalization may be introduced in this stage but spelling is not corrected (unless the child insists) because nothing is to get in the way of the child's flow of ideas. Spelling is studied separately, and as the study progresses the spelling in the compositions automatically improves. The same is true for grammar. The reason for studying spelling and grammar is to help the child in his or her creative self-expression.

Etymology is important in the elementary years. In addition to helping with comprehension and spelling, it is one way to keep language attached to historical development. Language contributes to the development of societies and cultures and it grows and changes as those societies and cultures grow and change. For this reason, children are also exposed to the story of the development of language in human culture. This keeps the study of language dynamic and alive.

Computer work, beginning with keyboard skills, is initiated when children enter the elementary. One or two computers in the classroom environment make the practicing of this skill available for the children's choice, just as are all other parts of the curriculum. A computer lab in a separate room is unnecessary and should be avoided because of the disruption that would create in the work cycle. Programs that develop keyboard skills should be straight keyboard programs without "entertainment" aspects such as gremlins that devour letters if they are not typed fast enough. Children are generally interested in learning keyboard skills and do not need extraneous entertainments. It is recommended that the computer be regarded as a useful tool rather than as a toy. One of the important discoveries of Montessori was that knowledge or skill practice did not have to be "sugar coated" in order to be attractive to children — if the knowledge or skills are offered to children when they were interested in acquiring them. Recommended use of computers in Montessori classes includes word processing and logo. The latter may be used as a complement to geometry work in the elementary years.

Jean K. Miller

LANGUAGE FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. EXPANSION OF LANGUAGE

- **A. Enrichment of Vocabulary - Spoken Language:**
  - (Parallel activities - no special order)
  - 1. Objects in the environment
  - 2. Sensorial apparatus (qualities)
  - 5.659.00 positive, comparative, superlative (This written form comes later.)
  - 3. Classified cards:
  - 5.634.00 phonetic pictures and labels, print
  - 5.634.10 phonetic pictures and labels, cursive
- **B. Language Training:**
  - (Parallel activities - no special order)
  - 1. Story telling (true information)
  - 2. Poetry
  - 3. Self-expression
  - 4. The Question Game

II. WRITING

- **A. Sound Games:**
  - objects in the environment
- **B. Sandpaper Letters:**
  - 0.054.B4 sandpaper letters, cursive, U.S.A.
  - 0.054.AO box for sandpaper letters
  - set up for preparing fingertips:
    - 1 tray
    - 1 small bowl
    - a supply of small terry cloth towels
    - 1 small pitcher
    - sandpaper letters grouped according to similarity of beginning stroke on a green lined background which shows placement on a line
    - double sandpaper letters which show joining of letters
- **C. Movable Alphabet:**
  - 1.640.00 to 1.644.00 carpets in 5 colors (2 of each color)
  - 1.650.00 stand for 5 carpets (2)
  - 0.059.A4 large movable alphabet letters only, cursive, U.S.A. (3 sets)
  - 0.059.A3 large movable alphabet letters only, print, U.S.A.
  - 0.059.C1 box for large movable alphabet, cursive, U.S.A. (3 boxes)
  - 0.059.C3 box for large movable alphabet, print, U.S.A.
- **D. Metal Insets:**
  - 0.046.00 metal insets
  - 0.047.00 stands for metal insets
  - 1.630.00 wall frame for insets and supplies for inset exercises
  - 5.679.00 inset paper, bulk, white, 6 reams (2)
  - 7.023.00 paper box for 14x14 cm paper (5-1/2x5-1/2") (2)
  - 7.201.00 12 color/gross inset pencils
  - 7.202.00 dozen red inset pencils (5)
  - 7.203.00 dozen dark blue inset pencils (5)
  - 7.204.00 dozen dark green inset pencils (5)
  - 7.211.00 dozen black inset pencils (5)
  - 7.304.00 pencil holders (5)
  - 7.305.00 set of 11 colored pencil holders
  - 9.157.00 rubber desk top pad 5.5" x 5.5" (backing for metal inset paper)
  - cardboard or poster board cut to same size as metal inset frame
  - supply of paper in pastel colors 51/2 x 5 1/2" in box
  - supply of white paper 5 1/2 x 5 1/2" in box
  - trays (5)
- **E. Small Metal Insets:**
  - 0.114.00 fraction circles (see math)
  - 0.114.A0 stands for fraction circles (see math)
  - 0.115.00 squares
  - 0.116.00 triangles
  - 1.666.00 small cabinet to hold circles, squares, triangles
  - compass
  - paper, 8-1/2 x 11"
  - pencils:
    - colored
    - regular
  - protractor
  - ruler
- **F. Handwriting:**
  - 0.054.A0 box for sandpaper letters
  - 0.054.B4 sandpaper letters
  - 0.059.A3 large movable alphabet letters only, print, U.S.A. (3 sets)
  - 0.059.A4 large movable alphabet letters only, cursive, U.S.A. (3 sets)
  - 0.059.C1 box for large movable alphabet, cursive, U.S.A. (4 boxes)
  - 0.066.00 greenboard, blank (4)
  - 0.067.00 greenboard, single lines (3)
  - 0.068.00 greenboard, double lines (3)
  - 1.635.00 stand for ten greenboards
  - 5.660.00 to 5.665.00 writing paper, blue lined
  - 5.666.00 to 5.669.00 writing paper, green lined
  - chalkboard, preferably at a slant, on the wall
  - pencils
  - sandpaper letters grouped according to similarity of beginning stroke on a green lined background which shows placement on a line

III. READING I

- **A. Phonetic Object Game:**
  - 5.636.00 object box labels
  - box containing objects whose names are phonetic (change regularly)

	(available from Montessori Services)
	box containing printed tickets for the objects
	pencil
	slips of paper

B. Phonetic Reading:

5.633.00	phonetic flash cards
5.634.00	phonetic pictures and labels, print (2) and/or
5.634.10	phonetic pictures and labels, print (2)
5.635.00	phonetic reading cards, print
5.635.10	phonetic reading cards, cursive
5.649.10	first books

C. Phonograms: (See 5.674.00 Word Lists for the American English Language)

5.636.00	object box labels (as above)
5.637.00	phonogram booklets
5.638.00	phonogram cards
5.639.00	key spelling sorting cards
5.649.10	first books (as above)
0.060.A3	small movable alphabet, letters only, print, red (two or three)
0.060.A7	small movable alphabet, letters only, print, black (two or three) (yellow, blue & green are also available)
0.060.C2	box for small movable alphabets (2)
	box for labels
	box of phonetic objects with one unphonetic object
	pencil
	slips of paper

IV. READING II

A. Word Study:

charts with printed lists of words

1. suffixes
2. prefixes
3. word families
4. compound words

movable alphabets, four or six, small, each a different color (see above)

B. Puzzle Words:

0.060.A4	small movable alphabet, yellow
0.060.C2	box for small movable alphabet
5.648.00	puzzle words
	boxes or baskets

C. Reading Classification:

5.634.00	phonetic pictures and labels, print (2) (as above), and/or
5.641.00	labels for Montessori apparatus
5.642.00	labels for fabrics
5.643.00	labels for fruits
5.644.00	labels for indoor environment
5.645.00	labels for vegetables
5.646.00	labels for herbs, seeds, etc.
5.647.00	labels for Montessori math materials
5.659.00	positive, comparative, superlative labels

D. First Books:

5.649.10	first books (as above)
5.650.00	easy reading booklets
5.651.00	illustrated poems

V. FUNCTION OF WORDS

A. Nouns:

0.249.06/0.249.07	farm
1.625.00	table for the farm
5.657.00	noun labels for the farm

B. Article:

5.655.00	grammar games - Set 1
	box of small articles
	box with printed tickets
	pencil
	slips of paper

C. Adjective:

0.110.00	plastic grammar symbols with box
0.111.00	grammar symbols
0.112.A0	grammar symbols box, 10 compartments
5.658.00	adjective phrases for the farm
	box of printed slips describing each object
	objects related to each other (i.e. - farm)
	pencil
	scissors
	slips of paper

D. The Logical Adjective Game:

0.111.00	grammar symbols (as above)
0.112.A0	box for grammar symbols (as above)
	box
	card material (handmade)

E. The Detective Adjective Game:

0.045.A0	detective adjective triangle exercise
0.111.00	grammar symbols (as above)
0.112.A0	box for grammar symbols (as above)
	paper
	pencil

F. Conjunction:

0.111.00	grammar symbols (as above)
0.112.A0	box for grammar symbols (as above)
5.655.00	grammar games - Set 1 (as above)
5.656.00	conjunctions and prepositions
	articles, 3 or 4, having a relationship with one another
	farm
	ribbon
	pencils, red and black
	printed tickets
	slips of paper

G. Preposition:

0.111.00	grammar symbols (as above)
0.112.A0	box for grammar symbols (as above)

5.655.00 grammar games - Set 1 (as above)
5.656.00 conjunctions and prepositions
articles, 3, having a relationship with one another
box or vase
farm
prepared tickets (have several different sets)
red and black pencils
ribbon
slips of paper

H. Verb:
0.111.00 grammar symbols (as above)
0.112.A0 box for grammar symbols (as above)
5.653.00 simple phonetic commands - Set 1
5.654.00 simple phonetic commands - Set 2
boxes (2)
farm
pencil
slips of paper

I. Adverb:
0.111.00 grammar symbols (as above)
0.112.A0 box for grammar symbols (as above)
adverbial commands (handmade) (supply of commands for changing the contents of the box pencil)
slips of paper

J. The Logical Adverb Game:
0.111.00 grammar symbols (as above)
0.112.A0 box for grammar symbols (as above)
box
card material (handmade)

K. Continuation of Commands:
0.111.00 grammar symbols (as above)
0.112.A0 box for grammar symbols (as above)
slips of paper
commands

VI. READING ANALYSIS

A. Simple Sentences:
0.111.00 grammar symbols (as above)
0.112.A0 box for grammar symbols (as above)
7.701.00 scissors with round point 10.5 cm.
7.708.00 six scissor storage block
box
chart of prepared sentences
paper arrows:
  black
  red
pencil
printed sentence slips chosen from good authors, giving the child the possibility of interpretation
slips of paper

B. Simple Sentences - Stage of Arrows with Questions:
0.108.01 reading analysis (use first chart and box)
circles, unmarked:
  large red
  medium black
  small black
first analysis charts

C. Simple Sentences with Extensions:
0.108.01 reading analysis: two charts and four boxes
two sets of printed sentences (1 for control)

D. Simple Sentences - Attributes and Appositives:
0.108.01 reading analysis: two charts and four boxes
two sets of printed sentences (1 for control)

LANGUAGE FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.045.A0	detective adjective triangle exercise
0.046.00	metal Insets
0.047.00	stands for metal insets
0.054.B4	sandpaper letters, cursive, U.S.A.
0.054.AO	box for sandpaper letters
0.056.B4	double sandpaper letters, cursive, U.S.A.
0.056.AO	box for double sandpaper letters
0.059.A3	large movable alphabet letters, print, U.S.A.
0.059.A4	large movable alphabet letters, cursive, U.S.A. (1 set)
0.059.C1	box for large movable alphabet, cursive, U.S.A. (1 box)
0.059.C3	box for large movable alphabet, print, U.S.A.,
0.060.A3	small movable alphabet, letters only, print, red
0.060.A4	small movable alphabet, letters only, print, yellow
0.060.A7	small movable alphabet, letters only, print, black (yellow, blue and green are also available)
0.060.C2	box for small movable alphabets (3)
0.066.00	greenboard, blank (4)
0.067.00	greenboard, single lines (3)
0.068.00	greenboard, double lines (3)
0.108.01	reading analysis: two charts and four boxes
0.110.00	plastic grammar symbols in box
0.111.00	grammar symbols
0.112.A0	grammar symbols box, 10 compartments
0.114.00	fraction circles
0.114.A0	stands for fraction circles
0.115.00	squares
0.116.00	triangles
0.249.06/0.249.07	farm
1.625.00	table for the farm
1.630.00	wall frame for metal insets and all supplies for metal inset exercises
1.635.00	stand for ten greenboards
1.640.00 to 1.644.00	carpets in 5 colors (2 of each color)
1.650.00	stand for 5 carpets (2)
1.666.00	small cabinet to hold circles, squares, triangles
7.023.00	paper box for 14 x 14 cm paper (5-1/2x5-1/2") (2)
7.201.00	12 color/gross inset pencils (3)
7.202.00	dozen red inset pencils (5)
7.203.00	dozen dark blue inset pencils (5)
7.204.00	dozen dark green inset pencils (5)
7.211.00	dozen black inset pencils (5)
7.304.00	pencil holders (5)
7.305.00	set of 11 colored pencil holders
7.701.00	scissors with round point 10.4 cm. (12)
7.708.00	six scissor storage block (2)
9.157.00	rubber desk top pad 5.5" x 5.5" (5) (backing for metal inset paper)

CURRICULUM SUPPORT MATERIALS

5.633.00	phonetic flash cards
5.634.00	phonetic pictures and labels, print (3) and/or
5.634.10	phonetic pictures and labels, cursive (3)
5.635.00	phonetic reading cards, print
5.635.10	phonetic reading cards, cursive
5.636.00	object box labels
5.637.00	phonogram booklets
5.638.00	phonogram cards
5.639.00	key spelling sorting cards
5.641.00	labels for Montessori apparatus
5.642.00	labels for fabrics
5.643.00	labels for fruits
5.644.00	labels for indoor environment
5.645.00	labels for vegetables
5.646.00	labels for herbs, seeds, etc.
5.647.00	labels for Montessori math materials
5.647.01	labels for environment
5.648.00	puzzle words
5.649.10	first books
5.650.00	easy reading booklets
5.651.00	illustrated poems
5.652.00	story of writing
5.653.00	simple phonetic commands - Set 1
5.654.00	simple phonetic commands - Set 2
5.655.00	grammar games - Set 1
5.656.00	conjunctions and prepositions
5.657.00	noun labels for the farm
5.658.00	adjective phrases for the farm
5.659.00	positive, comparative, superlative labels
5.660.00	writing paper blue lined 2" x 8.5" (2)
5.661.00	writing paper blue lined 4" x 8.5" (2)
5.662.00	writing paper blue lined 4.24" x 5.5" (2)
5.663.00	writing paper blue lined 2.75" x 7" (2)
5.664.00	writing paper blue lined 7" x 8.5" (2)
5.665.00	writing paper blue lined 8.5" x 11" (2)
5.667.00	writing paper green lined 4" x 7" (2)
5.668.00	writing paper green lined 7" x 8.5" (2)
5.669.00	writing paper green lined 8.5" x 11" (2)
5.679.00	inset paper, bulk, 6 reams (2)
5.674.00	*Word Lists for American English Language*

LANGUAGE FOR THE PRESCHOOL

OTHER MATERIALS TO BUY

- baskets for language cards
- books
- bowl, small (for set-up for preparing fingertips)
- boxes:
  - for object box exercises
  - for language cards
  - for preposition exercise
- chalk
- compasses
- erasers for chalk boards
- objects:
  - for object boxes
  - for article exercise
- paper:
  - long slips for writing examples in front of the child
- pastel colors 5.5" x 5.5" (for metal inset work)
- pencils, regular
- picture sources for language cards
- pitchers, small (for set up for preparing fingertips)
- protractors
- ribbon
- rulers
- towels, terry cloth (for set-up for preparing fingertips)
- trays:
  - for set-up for preparing fingertips
  - for metal insets
  - for small metal insets
- vase

LANGUAGE FOR THE PRESCHOOL
MATERIALS TO MAKE

- arrows, black
- charts:
  - sandpaper letters grouped according to similarity of beginning stroke
  - suffixes
  - prefixes
  - word families
  - compound words
  - prepared sentences for reading analysis
- circles:
  - red
  - black
- commands:
  - adverbial
  - one action, two actions, more actions, etc.
- sentences for reading analysis
- tickets:
  - article exercise
  - logical adjective game
  - logical adverb game

LANGUAGE FOR THE ELEMENTARY
ACTIVITIES AND MATERIALS OVERVIEW

I. **HISTORY OF LANGUAGE**
- A. **Written Language** (Great Lesson: The Story of Communication in Signs) Includes pre-alphabetical signs, the alphabet, development of different "hands," development of the printing press, etc.
  - 5.652.00 story of writing
  - charts (handmade)
  - other materials at teacher's discretion and choice
- B. **Spoken Language**
  - 1. Theories of the beginning of speech (in story form)
  - 2. The development of languages throughout the ages to present day English
  - charts (handmade)

II. **GRAMMAR AND SYNTAX**
- A. **Word Study**
  - 1. Affixes
    - a. Suffixes
      - 0.060.A3 small movable alphabet letters, red, USA
      - 0.060.A4 small movable alphabet letters, yellow, USA
      - 0.060.A5 small movable alphabet letters, blue, USA
      - 0.060.A7 small movable alphabet letters, black, USA
      - 0.060.C2 box for small movable alphabet (4)
      - 7.201.00 12 color/gross inset pencils
      - 7.304.00 pencil holders
      - 7.305.00 set of 11 colored pencil holders
      - charts (handmade)
      - colored inks
      - dictionaries
      - grammar books - for upper elementary work
    - b. Prefixes
      - 0.060.A3 small movable alphabet letters, red, USA (as above)
      - 0.060.A4 small movable alphabet letters, yellow, USA (as above)
      - 0.060.A5 small movable alphabet letters, blue, USA (as above)
      - 0.060.A7 small movable alphabet letters, black, USA (as above)
      - 0.060.C2 box for small movable alphabet (4) (as above)
      - 7.201.00 2 color/gross inset pencils (as above)
      - 7.304.00 pencil holders (as above)
      - 7.305.00 set of 11 colored pencil holders (as above)
      - chart (handmade)
      - colored inks (as above)
      - dictionaries (as above)
      - grammar books - for upper elementary work (as above)
  - 2. Compound Words
    - 0.060.A3 small movable alphabet letters, red, USA (as above)
    - 0.060.A4 small movable alphabet letters, yellow, USA (as above)
    - 0.060.A5 small movable alphabet letters, blue, USA (as above)
    - 0.060.A7 small movable alphabet letters, black, USA (as above)
    - 0.060.C2 box for small movable alphabet (4) (as above)
    - 7.201.00 12 color/gross inset pencils (as above)
    - 7.304.00 pencil holders (as above)
    - 7.305.00 set of 11 colored pencil holders (as above)
    - chart (handmade)
    - collection of objects (i.e., different types of boxes)
    - colored inks (as above)
    - dictionaries (as above)
    - grammar books - for upper elementary work (as above)
  - 3. Word Families
    - 0.060.A3 small movable alphabet letters, red, USA (as above)
    - 0.060.A4 small movable alphabet letters, yellow, USA (as above)
    - 0.060.A5 small movable alphabet letters, blue, USA (as above)
    - 0.060.A7 small movable alphabet letters, black, USA (as above)
    - 0.060.C2 box for small movable alphabet (4) (as above)
    - 7.201.00 2 color/gross inset pencils (as above)
    - 7.304.00 pencil holders (as above)
    - 7.305.00 set of 11 colored pencil holders (as above)
    - chart (handmade)
    - colored inks (as above)
    - dictionaries (as above)
    - grammar books - for upper elementary work (as above)
  - 4. Synonyms (after verb grammar box)
    - verb command cards
  - 5. Antonyms
  - 6. Homonyms
  - 7. Possessives
  - 8. Contractions
  - 9. Abbreviations
- B. **Parts of Speech** - General plan of work includes: oral commands, grammar boxes, printed

commands, classification charts and work, composition, research, grammar books. The set of material for the grammar box work Includes:

- 0.102.01 grammar boxes
- 0.103.01 filling boxes
- 0.104.01 set of printed grammar cards (includes 0.105.C1) and/or
- 0.104.A0 set of unprinted grammar cards and
- 0.105.C1 printed command cards complete
- 0.105.02 grammar box material outline
- 0.105.A1 set of command boxes
- 0.110.00 plastic grammar symbols (for work with grammar boxes)
- 0.111.00 paper grammar symbols, complete set (for children's own work) (2)
- 0.112.00 box for 15 grammar symbols (2)

In addition, extra grammar symbols should be ordered for the parts of speech most frequently used in the children's work.

- 0.111.A0 noun symbol per 100 (5)
- 0.111.B0 article symbol per 100 (5)
- 0.111.C0 adjective symbol per 100 (5)
- 0.111.E0 verb symbol per 100 (5)
- 0.111.F0 preposition symbol per 100 (4)
- 0.111.G0 adverb symbol per 100 (4)
- 0.111.H0 pronoun symbol per 100 (4)
- 0.111.I0 conjunction symbol per 100 (3)
- 0.111.J0 interjection symbol per 100 (2)

1. Noun
   - 0.102.01 article-noun grammar box (as above)
   - 0.103.01 noun filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - 5.620.00 animals and their homes
   - 5.622.00 animals and their young
   - 5.623.00 animal names
   - 5.624.00 animals and their groups
   - 5.655.00 grammar games, set 1
   - booklets for plurals (handmade)
   - card materials (handmade)
   - collection of objects of the same kind
   - grammar books - for upper elementary work
   - noun charts (handmade)
   - pyramid (handmade)
2. Adjective
   - 0.045.A0 detective adjective triangle exercise
   - 0.102.01 adjective grammar box (as above)
   - 0.103.01 adjective filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - 5.612.00 detective adjective exercise labels
   - 5.655.00 grammar games, set 1 (as above)
   - 5.658.00 adjective phrases for the farm (for beginning readers)
   - 5.659.00 positive, comparative, superlative
   - adjective charts (handmade)
   - card material (handmade)
   - grammar books - for upper elementary work
3. Verb
   - 0.102.01 verb grammar box (as above)
   - 0.103.01 verb filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - 5.621.00 animals and their sounds
   - charts (handmade)
   - commands (handmade)
   - grammar books - for upper elementary work
   - pyramid (same pyramid listed under noun)
   - red ball
4. Preposition
   - 0.102.01 preposition grammar box (as above)
   - 0.103.01 preposition filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - 5.656.00 conjunctions and prepositions
   - grammar books - for upper elementary work
5. Adverb
   - 0.102.01 adverb grammar box (as above)
   - 0.103.01 adverb filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - grammar books - for upper elementary work
6. Pronoun
   - 0.102.01 pronoun grammar box (as above)
   - 0.103.01 pronoun filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - charts (handmade)
   - card material (handmade)
   - grammar books - for upper elementary work
7. Conjunction
   - 0.102.01 conjunction grammar box (as above)
   - 0.103.01 conjunction filling boxes (as above)
   - 0.110.00 plastic grammar symbols
   - 0.111.00 grammar symbols
   - 0.112.00 box for 15 grammar symbols
   - 5.656.00 conjunctions and prepositions
   - card material (handmade)
   - grammar books - for upper elementary work

8. Interjection
    - 0.102.01 interjection grammar box (as above)
    - 0.103.01 interjection filling boxes (as above)
    - 0.110.00 plastic grammar symbols
    - 0.111.00 grammar symbols
    - 0.112.00 box for 15 grammar symbols
    - grammar books - for upper elementary work
9. Aspects of the Verb
    - card material (handmade)
    - charts (handmade)
    - grammar books
10. Summary Exercises
    - charts (handmade)

C. Reading Analysis

General materials for reading analysis include:
- 0.108.01 reading analysis complete
- 0.108.B1 reading analysis chart A

1. Simple Sentences
    - 0.108.01 reading analysis complete (box two and box three)
    - 0.108.B1 reading analysis chart A
    - grammar books
2. Compound Sentences
    - paper
    - pencils (regular and red)
    - scissors
    - small labels (handmade)
3. Complex Sentences
    - analysis chart B (handmade)
    - analysis chart C (handmade)
    - clause boxes 1 and 2 (handmade)
    - paper
    - pencil
    - scissors
    - small labels (handmade)

III. WRITTEN LANGUAGE (COMPOSITION)

A. Free Expression
1. Imaginative
2. Factual (history, geography, biology, music, art, etc.)
3. Descriptive

B. Practice
1. Form and Content
2. Punctuation
3. Spelling
4. Capitalization
5. Handwriting
    - 0.046.00 metal insets
    - 0.066.00 greenboard, blank (4)
    - 0.067.00 greenboard, lines, squares (3)
    - 0.068.00 greenboard, double lined (3)
    - 1.635.00 stand for 10 greenboards
    - 5.660.00 writing paper blue lined 2"x8.5"
    - 5.661.00 writing paper blue lined 4"x8.5"
    - 5.662.00 writing paper blue lined 4.25"x5.5"
    - 5.663.00 writing paper blue lined 2.75"x7"
    - 5.664.00 writing paper blue lined 7"x8.5"
    - 5.665.00 writing paper blue lined 8.5"x 11"
    - 5.667.00 writing paper green lined 4"x7"
    - 5.668.00 writing paper green lined 7"x8.5"
    - 5.669.00 writing paper green lined 8.5"x11"
    - 7.023.00 box for 14cm x 14cm paper
    - 7.201.00 12 color/gross inset pencils (5)
    - 7.202.00 dozen red inset pencils (5)
    - 7.203.00 dozen dark blue inset pencils (5)
    - 7.204.00 dozen dark green inset pencils (5)
    - 7.211.00 dozen black inset pencils (5)
    - 7.304.00 pencil holders (5)
    - 7.305.00 set of 11 colored pencil holders
    - colored inks
    - feather quills
    - ink blotter, small
    - pencils, regular
    - pen holders and nibs
    - pen wipers
    - pens
6. Illustration and Decoration

C. Functional Cursive Writing

D. Taking Notes

E. Written Reports

F. Letter Writing

G. Diary

H. Journal

I. Poetry

J. Drama

K. Dialogue
- 0.061.R1 small printed alphabet, blue
- 0.061.R2 small printed alphabet, green
- 0.061.R3 small printed alphabet, red
- 0.061.C1 box for small printed alphabet (3)

L. Essay

M. Biography

N. Autobiography

O. Editing

IV. SPOKEN LANGUAGE

A. Speeches

B. Debates

C. Discussion

D. Reports

E. Recitation

F. Dialogue

G. Drama

V. LITERATURE

A. Articles and Books - read by the children silently
1. Class library
2. Public library

B. Stories and Poetry Read by the Teacher

C. Biographies of Writers

D. Literature Time Lines

E. The History of English Literature

F. The History of American Literature

G. The History of Children's Literature

VI. STYLE

Materials used for the study of style have already been listed above under the parts of speech work.

The materials include:
- 0.110.00 plastic grammar symbols and/or

0.111.00 paper grammar symbols
0.112.00 box for 15 grammar symbols

- **A. Child's Own Writing**
- **B. Writing of Others**
- **C. Comparison of Style**
- **D. Recognition of Style**

VII. INTERPRETIVE READING

All materials for interpretive reading are handmade by the teacher.

VIII. RESEARCH

- **A. Skills for Researching**
- **B. History of Languages**
- **C. History of Writing**
- **D. History of Literature**

NOTE: All above go parallel.

IX. MISCELLANEOUS

A. Study of Paragraphs (main idea, topic sentence, supporting details, etc.)

B. Story Grammar

C. Literary Phrases (idioms, colloquialisms, metaphores, similies)

D. Other Materials (not listed above which are frequently needed):

7.701.00 scissors with round point 10.4 cm (12)
and/or
7.702.00 scissors with sharp point 10.4 cm (12)
7.708.00 six scissor storage block (2)
boxes, clear plastic (for handmade card material) (6)
small trays, as necessary
strips of paper or adding machine tape

PRESCHOOL MATERIALS SOMETIMES USED IN ELEMENTARY CLASSROOMS

SIMPLE INVENTORY

MATERIALS FROM NIENHUIS

These materials are essentially preschool materials, but they may be found in some elementary classes. According to Dr. Montessori's advice, preschool materials should not be presented to elementary children except for very specific pieces which are to be given in such a way as to help fill any gaps in knowledge.

0.054.B4	sandpaper letters, cursive, U.S.A.
0.054.A0	box for sandpaper letters
0.105.B0	command box, natural finish (may be used for storage of 5.634.00 or 5.634.10, 5.635.00 or 5.635.10, 5.638.00, 5.639.00, 5.641.00, 5.642.00, 5.643.00, 5.644.00, 5.645.00, 5.646.00, 5.647.00, 5.647.00, and 5.648.00) (13)
5.633.00	phonetic flash cards
5.634.00	phonetic pictures and labels, print (group into classified sets) and or
5.634.10	phonetic pictures and labels, cursive (group into classified sets)
5.635.00	phonetic reading cards, print and or
5.635.10	phonetic reading cards, cursive
5.636.00	object box labels
5.637.00	phonogram booklets
5.638.00	phonogram cards
5.639.00	key spelling sorting cards
5.641.00	labels for Montessori apparatus
5.642.00	labels for 60 fabrics
5.643.0	labels for 60 fruits
5.644.00	labels for indoor environment
5.645.00	labels for 60 vegetables
5.646.00	labels for 60 herbs, seeds, spices, nuts and grains
5.647.00	labels for Montessori math apparatus
5.647.01	labels for environment
5.648.00	puzzle words
5.649.10	first books
5.650.00	easy reading booklets
5.651.00	illustrated poems
5.653.00	simple phonetic commands, set 1
5.654.00	simple phonetic commands, set 2

In addition to the above curriculum support materials, the 6 to 9 year old class may either borrow these items from a preschool class, or have its own.

0.249.06	base with fences for the farm
0.249.07	farm, or house environment
1.625.00	table for the farm

LANGUAGE FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.045.A0	detective triangle game
0.046.00	metal insets
0.060.A3	small movable alphabet letters, red, USA
0.060.A4	small movable alphabet letters, yellow, USA
0.060.A5	small movable alphabet letters, blue, USA
0.060.A7	small movable alphabet letters, black, USA
0.060.C2	box for small movable alphabet (4)
0.061.C1	box for small printed alphabets (3)
0.061.R1	small printed alphabet, blue
0.061.R2	small printed alphabet, green
0.061.R3	small printed alphabet, red
0.066.00	greenboard, blank (4)
0.067.00	greenboard, lines, squares (3)
0.068.00	greenboard, double lined (3)
0.102.01	grammar boxes
0.103.01	filling boxes
0.104.01	set of printed grammar cards
0.104.A0	set of unprinted grammar cards
0.105.02	grammar box material outline
0.105.A1	set of command boxes
0.105.B0	command box, natural finish (up to 20)
0.108.01	reading analysis complete
0.108.B1	reading analysis chart
0.110.00	plastic grammar symbols
0.111.00	grammar symbols, complete set (2)
0.111.A0	noun symbol per 100 (5)
0.111.B0	article symbol per 100 (5)
0.111.C0	adjective symbol per 100 (5)
0.111.E0	verb symbol per 100 (5)
0.111.F0	preposition symbol per 100 (4)
0.111.G0	adverb symbol per 100 (4)
0.111.H0	pronoun symbol per 100 (4)
0.111.I0	conjunction symbol per 100 (3)
0.111.J0	interjection symbol per 100 (2)
0.112.00	box for 15 grammar symbols (2)
1.635.00	stand for 10 greenboards
7.023.00	box for 14cm x 14cm paper
7.201.00	12 color/gross inset pencils (3)
7.202.00	dozen red inset pencils (5)
7.203.00	dozen dark blue inset pencils (5)
7.204.00	dozen dark green inset pencils (5)
7.211.00	dozen black inset pencils (5)
7.304.00	pencil holders (5)
7.305.00	set of 11 colored pencil holders
7.701.00	scissors with round point 10.4 cm (6)
7.702.00	scissors with sharp point 10.4 cm (6)
7.708.00	6 scissor storage block (2)

CURRICULUM SUPPORT MATERIALS

5.612.00	detective adjective exercise labels
5.620.00	animals and their homes
5.621.00	animals and their sounds
5.622.00	animals and their young
5.623.00	animal names
5.624.00	animals and their groups
5.636.00	object box labels
5.639.00	key spelling sorting cards
5.641.00	labels for Montessori apparatus
5.642.00	labels for 60 fabrics
5.643.00	labels for 60 fruits
5.644.00	labels for indoor environment
5.645.00	labels for 60 vegetables
5.646.00	labels for 60 herbs, seeds, spices, nuts and grains
5.647.00	labels for Montessori math apparatus
5.647.01	labels for environment
5.651.00	illustrated poems
5.652.00	story of writing
5.653.00	simple phonetic commands, set 1
5.654.00	simple phonetic commands, set 2
5.655.00	grammar games, set 1
5.656.00	conjunctions and prepositions
5.657.00	noun labels for the farm
5.658.00	adjective phrases for the farm
5.659.00	positive, comparative, superlative
5.660.00	writing paper blue lined, 2" x 8-1/2" (2)
5.661.00	writing paper blue lined, 4" x 8-1/2" (2)
5.662.00	writing paper blue lined, 4-1/4" x 5-1/2" (2)
5.663.00	writing paper blue lined, 2-3/4" x 7" (2)
5.664.00	writing paper blue lined, 7" x 8-1/2" (2)
5.665.00	writing paper blue lined, 8-1/2" x 11" (2)
5.667.00	writing paper green lined, 4" x 7" (2)
5.668.00	writing paper green lined, 7" x 8-1/2" (2)
5.669.00	writing paper green lined, 8-1/2" x 11" (2)

LANGUAGE FOR THE ELEMENTARY
OTHER MATERIALS TO BUY

ball, red (should bounce well)
boxes, clear plastic
dictionaries
feather quills (2)
grammar books, one each from several different publishers
house environment
ink blotter, small
ink, packet with 8 bottles of colored inks
paper, roll of adding machine tape or strips of paper
pen holders and nibs
pencils, regular
pens
tray, white

LANGUAGE FOR THE ELEMENTARY
MATERIALS TO MAKE

booklets for singular and plural
card materials
charts
circles, about 15 in a box
clause analysis - 2 boxes
collection of objects of the same kind
commands
house environment
penwipers - circular in shape
pyramid, 3 dimensional, black
squares, about 30 in a box
verb materials

MATHEMATICS

CURRICULUM RESOURCES

MATHEMATICS

INTRODUCTION

Montessori materials are useful as self-teaching tools because the concept or fact to be studied is isolated with each of the materials. In Montessori terminology this is called "isolation of the difficulty." To give an initial concept, the material should focus on only the concept in question. For example, to introduce the idea of cube, a plain wooden cube would be used rather than a cube-shaped object such as a jack-in-the-box. The idea of a jack-in-the-box would overpower the idea of a cube and, thus, introduce an idea very different from the desired concept. Montessori felt it was better to use a material with little or no personality of its own when introducing new concepts. For this reason numbers are introduced with colored rods rather than with kittens, ducks and birds. Introducing animals into the lesson brings an extraneous idea that diverts attention from the concept of number. When the concept is firmly established it can be applied to other things such as counting kittens, ducks and birds.

Each difficulty is also isolated in turn in a graded sequence. Various aspects of mathematics, many of which run parallel to each other and each of which have their own graded sequence, include:

1. Perception of differences
2. Perception of similarities
3. Sensorial experience of a graded series (seriation)
4. Rote counting
5. Quantities and symbols for zero to ten

6-a. Overview and functioning of the base ten system from 0 to 9999
6-b. Linear counting to 1000

7. The idea of the four operations: addition, subtraction, multiplication, division
8. Memorization of the facts for addition, subtraction, multiplication, division
9. Abstraction of various mathematical processes

While 6-a is generally introduced first, 6-a and 6-b proceed in parallel fashion. Once a child has a firm foundation of concrete experience using operations in number 7, work may begin with memorization of facts for the operations and other materials may be used which will help move the child towards abstraction of the process.

In order for details to be seen in their relationship to the whole rather than in meaningless isolation, initial vocabulary and concepts which make possible a view of the whole system are given as soon as possible. After a view of the whole, one can proceed to the details. In the case of mathematics, there is first perception of differences and similarities and sensorial experience with the concept of a graded series. Then there is the introduction of the initial vocabulary and concepts of zero to ten. If a child knows the numerals from zero to nine, he or she knows all the numerals used in our decimal number system. This makes possible a view of the whole number system which is then given. This whole view gives the idea of place value and the function of exchange. When the child has grasped this, addition, subtraction, multiplication and division may be presented using large quantities with concrete materials. The understanding of the four processes comes through the manipulation of concrete materials. At this point writing on paper in an abstract fashion would not be appropriate.

Without memorization of the facts children would be bound forever to the materials or to calculators. The facts ($2 + 2 = 4$, $7 + 8 = 15$, etc.) are as important for work in higher mathematics as the letters of the alphabet are for reading. While calculators have taken much of the tedious, repetitive computations out of

CURRICULUM RESOURCES

math work, knowledge of operations and processes and how they work is essential if children are to be given the opportunity to think creatively with mathematics.

There are many materials and exercises for memorization of math facts. This need not be a dull, dry process. With various activities and new points of interest, this can be accomplished relatively easily if undertaken at ages four, five and six.

In the memorization process it is important to have the answers available at all times so that the children need not count or guess to find the answers. They have already understood the processes and should now focus on the facts. Their thinking processes should be 7 + 8 = 15 rather than 7 + 8 = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15. It is the repetition of correct information that aids the process of memorization.

When children have reached this stage, they have all the tools and skills necessary for reaching abstraction. They understand quantity and symbol, the number system (place value and the function of exchange), the idea of the four processes, and the facts. Further manipulation of concrete materials leads the children to make their own abstractions. When children reach abstraction, their mental processes generally work so fast that they cannot be bothered with the time it takes to manipulate the materials.

When a proper Montessori situation has been provided (children enter by age three, environment is properly equipped, teacher is properly trained and fully implements Montessori, work cycle is respected, etc.) then, by the end of the preschool, most children will have worked through the first seven steps of the mathematical sequence. This means that they will have a concrete understanding of the processes of addition, subtraction, multiplication and division. They will also have begun the memorization of facts and they will be working with materials that will help lead them to abstraction. These materials include the bead frame (addition, subtraction and multiplication), measurement, long division material and fractions (all four processes). These materials overlap into the elementary as necessary. The sensorial experience at the preschool level provides children with an internalized understanding of process as well as great pleasure and joy in their understanding of mathematics.

When children enter the elementary, mathematics is put into an historical perspective with the telling of the Story of Numbers. This story is one of the five great lessons which are given at the beginning of each school year in order to set the stage for the drama of cosmic education. For the technical aspects of mathematics, hands-on use of materials continues in the elementary. Each new process is presented with materials so that the children proceed from sensorial experience to abstraction in a series of steps carefully constructed so that they are able to make their own discoveries and abstractions. Careful, precise preparation, both of the teacher during his or her Montessori training and by the Montessori teacher as he or she prepares lessons for the children, is essential in this guided-discovery approach.

Jean K. Miller

MATHEMATICS FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. NUMBERS TO TEN

A. Number Rods:
- 0.027.00 numerical rods

B. Sandpaper Numerals (Figures):
- 0.028.14 sandpaper figures, cursive, U.S.A.
- 0.028.A0 box for the sandpaper figures

C. Number Rods and Cards:
- 0.027.00 numerical rods (same as above)
- 0.033.04 printed figures, cursive, U.S.A.
- 0.033.A0 box for printed figures

D. Spindle Boxes:
- 0.032.04 spindle boxes, cursive, U.S.A.
- 0.032.B0 box for loose spindles
- 0.032.A0 extra spindles (10)
- ribbons or rubber bands

E. Memory Game of Numbers:
- 5.580.00 numerals 0 to 10
- basket

F. Cards and Counters:
- 0.033.04 printed figures, cursive, U.S.A.
- 0.033.A0 box for printed figures (2)
- 0.034.01 plastic counters, red

II. THE DECIMAL SYSTEM

A. Introduction to Beads:
- 0.074.00 individual wooden hundred square (order at least 12)
- 0.075.00 individual wooden thousand cube (order at least 12)
- 0.076.M0 box with 45 golden ten bars, individual beads
- 0.077.M0 plastic box containing 100 unit beads, like individual beads
- 0.081.00 wooden tray with unit cup (order 5)
- 0.084.AM one golden bead square
- 0.085.M0 one golden bead cube
- 0.252.A1 introduction decimal system, tray alone

B. Introduction to Cards:
- 0.072.C0 large number cards 1-9000, printed on plastic
- 0.069.A0 box for large number cards

C. Formation of Complex Numbers with Beads and Cards:
- 0.069.A0 box for large number cards
- 0.069.C0 large number cards 1-1000, printed on plastic
- 0.081.00 wooden tray with unit cup (order 3)
- 0.081.A0 units cup, golden color
- 0.252.M0 introduction decimal system, individual beads
- bowl

D. Collective Exercises - Changing:
- 0.074.00 individual wooden hundred square (order 99)
- 0.075.00 individual wooden thousand cube (order 9)
- 0.076.M0 box with 45 golden ten bars, individual beads (order 3 boxes)
- 0.077.M0 plastic box containing 100 unit beads, like individual beads
- 0.081.00 wooden tray with unit cup (order 1)
- bowls, 2, for up to 99 unit beads

E. Collective Exercises: *(Order one set of each of the following for a class of 25 children, two sets of each for a class of 35 children.)*
- 0.069.A0 box for large number cards
- 0.070.A0 box for small number cards (order 4 for each set)
- 0.070.C0 small number cards 1-3000, printed on plastic (order 3 for each set)
- 0.071.C0 small number cards 1-9000, printed on plastic
- 0.072.C0 large number cards 1-9000, printed on plastic
- 0.074.00 individual wooden hundred square (order 50 for each set)
- 0.075.00 individual wooden thousand cube (order 12 for each set)
- 0.076.M0 box with 45 golden ten bars, individual beads (order 3 boxes for each set)
- 0.077.M0 plastic box containing 100 unit beads, like individual beads

Note: If there needs to be two sets, divide the beads into two containers, so there are 50 beads for each set.

- 0.081.00 wooden tray with unit cup (order 3 for each set)
- 0.260.00 box with wooden signs for addition, subtraction, multiplication, division, etc.
- 5.580.00 numerals 0 to 10 - cut to size (order 2 for each set)
- bowls, 2, for up to 50 beads
- boxes, plastic, 2, for up to 50 beads
- boxes, plastic, 4, for small number cards (5.580.00)
- ribbons for division: 18 green bows, 9 blue bows, 9 red bows
- trays, large, 2

F. The Stamp Game:
- 0.082.00 stamp exercise
- 5.582.00 stamp exercise paper, 6 problems
- 5.583.00 stamp exercise paper, 15 problems
- 5.596.00 quadrille paper 1" sq. 8.5x6"
- 5.597.00 quadrille paper 1" sq. 8.5x11"
- 5.598.00 quadrille paper 3/4" sq. 5.5x8"
- 5.600.00 quadrille paper 3/4" sq. 8.5x11"
- 5.603.00 quadrille paper 1/2" sq. 8.5x11"

Note: Choice of paper depends on manual skill of each child. Use small numeral cards from the golden bead material until a child can write the

numerals easily and correctly.
pencil, regular
ruler, 6 inch

G. The Dot Game:
0.050.01 dot exercise and/or
0.050.A0 dot exercise sheets (5)
markers, washable:
black
another color (not green, blue or red)
pencils:
black, another color (not green, blue or red)

H. Word Problems:
Note: These are handmade by each individual teacher.

III. TEENS AND TENS

A. Teen Boards:
0.030.AM box with bead stair 1-9 and 10 ten bars, individual beads (2)
0.030.03 Seguin boards and numerals, print, U.S.A.
felt mat

B. Ten Boards:
0.031.03 Seguin boards and numerals, print, U.S.A.,
0.031.AM box with 9 ten bead bars and 9 unit beads, individual beads
felt mat

IV. LINEAR COUNTING

A. 00 and 1000 Chains
0.086.B0 20 boxes with arrows
0.086.M0 complete set bead material (cubes, squares, chains), individual beads
1.666.M0 frame for complete bead material

B. Skip Counting:
0.086.B0 20 boxes with arrows (as above)
0.086.M0 complete set bead material (cubes, squares, chains), individual beads (as above)
1.666.M0 frame for complete bead material (as above)

V. MEMORIZATION

A. Addition
0.092.00 addition strip board with strips
0.142.A0 addition charts with the blank chart and box of answers.
0.142.F1 four boxes with plastic chips
0.290.M0 snake game, addition, individual beads
5.595.21 addition tables booklet 1, per 40 (order 2)
5.595.22 addition tables booklet 2, per 40
5.595.23 addition tables booklet 3, per 40
5.586.00 beginning math paper
5.587.00 chart problem paper
5.588.00 circle problem paper
5.596.00 quadrille paper 1" sq. 8.5x6"
5.598.00 quadrille paper 3/4" sq. 5.5x8"
5.601.00 quadrille paper 1/2" sq. 3x5.5"
baskets, red rimmed, 4, for problem tickets
felt mat for snake game
pencil, regular
problems, folded tickets, on red card stock, 4 sets

B. Subtraction:
0.092.A0 subtraction strip board with strips
0.142.B0 subtraction charts with the blank chart and box of answers
0.142.F1 four boxes with plastic chips
0.291.M0 snake game, subtraction, individual beads
5.595.31 subtraction tables booklet 1, per 24 (order 3)
5.595.32 subtraction tables booklet 2, per 40
5.595.33 subtraction tables booklet 3, per 40
5.586.00 beginning math paper
5.587.00 chart problem paper
5.588.00 circle problem paper
5.596.00 quadrille paper 1" sq. 8.5x6"
5.598.00 quadrille paper 3/4" sq. 5.5x8"
5.601.00 quadrille paper 1/2" sq. 3x5.5"
baskets, green rimmed, 2, for problem tickets
felt mat for snake game
pencil, regular
problems, folded tickets, on green card stock, 2 sets

C. Multiplication:
0.076.00 box with 45 golden ten bars, connected beads (5 boxes)
0.087.00 multiplication board, cards in box, 100 red beads in box
0.142.C4 multiplication charts with the blank chart and box of answers
0.142.F1 four boxes with plastic chips
0.186.00 table of Pythagoras (borrow from Sensorial)
0.190.M0 box with 55 bead bars from 1 to 10, individual beads (2 boxes)
5.595.41 multiplication tables booklet 1, per 40 (order 2)
5.595.42 multiplication tables booklet 2, per 40
5.595.43 multiplication tables booklet 3, per 40
5.586.00 beginning math paper
5.587.00 chart problem paper
5.588.00 circle problem paper
5.596.00 quadrille paper 1" sq. 8.5x6"
5.597.00 quadrille paper 1" sq. 8.5x11"
5.598.00 quadrille paper 3/4" sq. 5.5x8"
5.599.00 quadrille paper 3/4" sq. 8.5x8.5"
5.600.00 quadrille paper 3/4" sq. 8.5x11"
5.601.00 quadrille paper 1/2" sq. 3x5.5"
5.602.00 quadrille paper 1/2" sq. 5.5x5.5"
5.603.00 quadrille paper 1/2" sq. 8.5x11"
basket, large, for bead bar multiplication
baskets, yellow rimmed, 3, for problem tickets

felt mat for multiplication with bead bars
pencil:
  red
  regular
problems, folded tickets, on yellow card stock, 3 sets

D. Division:

0.096.A0 division board with skittles and beads
0.138.M0 box containing 20 sets of bead bars from 1 - 9, individual beads
0.142.D1 division charts with the blank chart and box of answers.
0.142.F1 four boxes with plastic chips
5.595.50 division tables per ream
5.595.51 division tables booklets per 5 (order 6)
5.597.00 quadrille paper 1" sq. 8.5x11"
5.600.00 quadrille paper 3/4" sq. 8.5x11"
5.603.00 quadrille paper 1/2" sq. 8.5x11"
baskets, blue rimmed, 2, for problem tickets
cup for 81 beads
pencil, regular
problems, folded tickets, on blue card stock, 2 sets
ruler, 6 inches

VI. THE PASSAGE TO ABSTRACTION - PROBLEMS

A. Small Bead Frame:

0.093.00 small bead frame (order 3)
0.153.01 paper for small bead frame/50 sheets (2)
pencil, regular

B. Large Bead Frame:

0.094.00 large bead frame (order 2)
0.132.A0 wooden geometrical hierarchy of numbers (may be borrowed from the elementary class)
0.154.01 paper for large bead frame 50 sheets (2)
pencil, regular

C. Division with Racks and Tubes:

0.095.00 complete division material
0.095.A0 individual plastic tubes for replacements (10)
0.095.B0 100 green beads for replacements
0.095.B1 100 blue beads for replacements
0.095.B2 100 red beads for replacements
0.097.00 set of 100 skittles for replacements
5.597.00 quadrille paper 1" sq. 8.5x11"
5.600.00 quadrille paper 3/4" sq. 8.5x11"
5.603.00 quadrille paper 1/2" sq. 8.5x11"
pencil, regular

D. Fractions:

0.097.00 set of extra skittles (as above)
0.113.00 skittles, one undivided, the others divided into 2, 3 and 4 parts
0.113.A0 stand for skittles
0.114.00 fraction circles
0.114.A0 stands for fraction circles
0.115.00 nine squares
0.116.00 four triangles
1.666.00 small fraction cabinet for storage of above
5.605.00 fraction labels
5.606.00 fraction problems
5.607.10 fraction equivalence research sheets
boxes, plastic, 3, for fraction labels (5.605.00)
boxes, plastic, 5, for fraction problems (5.606.00)
pencil, regular

E. Measurement:

1. Length:
   - English measure ruler
   - meter stick
   - metric ruler
   - yardstick
2. Liquid Volume:
   - English measure containers
3. Weight:
   - 9.124.00 ten weights in a wooden storage box
   - 9.128.B0 balance scale, metal
   - bathroom scale in pounds
   - brass English measure weights
4. Temperature:
   - thermometer in Fahrenheit
5. Clock:
   - 3.101.01 clock exercises in box
   - 3.102.00 clock and box with movable figures
   - 3.105.00 rubber stamp of clock
   - clock with gears
   - ink pad
   - paper
6. Money:
   - money, real

MATHEMATICS FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.027.00	numerical rods
0.028.14	sandpaper figures, cursive, U.S.A.
0.028.A0	box for the sandpaper figures
0.030.AM	box with bead stair 1-9 and 9 ten bars, individual beads (2)
0.030.03	Seguin boards and numerals, print, teens
0.031.03	Seguin boards and numerals, print, tens
0.031.AM	box with 9 ten bead bars and 9 unit beads, individual beads
0.032.04	spindle boxes, cursive, U.S.A.
0.032.A0	extra spindles (10)
0.032.B0	box for loose spindles
0.033.04	printed figures, cursive, U.S.A. (3)
0.033.A0	box for printed figures (2)
0.034.01	plastic counters, red
0.050.01	dot exercise, and or
0.050.A0	dot exercise sheets
0.069.A0	box for large number cards (4)
0.069.C0	large number cards 1-1000, printed on plastic (box must be ordered separately)
0.070.A0	box for small number cards (10)
0.070.C0	small number cards 1-3000, printed on plastic (box must be ordered separately) (8)
0.071.C0	small number cards 1-9000, printed on plastic (box must be ordered separately) (2)
0.072.C0	large number cards 1-9000, printed on plastic (box must be ordered separately) (3)
0.074.00	individual wooden hundred square (order at least 211)
0.075.00	individual wooden thousand cube (order at least 45)
0.076.M0	box with 45 golden ten bars, individual beads (12)
0.077.M0	plastic box containing 100 unit beads, like individual beads (3)
0.081.00	wooden tray with unit cup (order 15)
0.082.00	stamp exercise
0.085.M0	golden bead cube with individual beads
0.086.M0	complete set bead material (cubes, squares, chains), individual beads
0.086.B0	boxes with arrows, 20
0.087.00	multiplication board, cards in box, 100 red beads in box
0.092.00	addition strip board with strips
0.092.A0	subtraction strip board with strips
0.093.00	small bead frame (order 3)
0.094.00	large bead frame (order 2)
0.095.00	complete division material
0.095.A0	individual plastic tubes for replacements (10)
0.095.B0	green beads for replacements, 100
0.095.B1	blue beads for replacements, 100
0.095.B2	red beads for replacements, 100
0.096.A0	division board with skittles and beads
0.097.00	set of 100 skittles for replacements
0.113.00	skittles, one undivided, the others divided into 2, 3 and 4 parts
0.113.A0	stand for skittles
0.114.00	fraction circles
0.114.A0	stands for fraction circles
0.115.00	nine squares
0.116.00	four triangles
0.138.M0	box containing 20 sets of bead bars from 1 to 9, individual beads
0.142.A0	addition charts with the blank charts and box of answers
0.142.B0	subtraction charts with the blank chart and box of answers
0.142.C4	multiplication charts with the blank chart and box of answers
0.142.D1	division charts with the blank chart and box of answers
0.142.F1	four boxes with plastic chips (of problems with answer tiles) for addition, subtraction, multiplication and division for use with the finger charts and blank charts
0.153.01	paper for small bead frame 50 sheets (2)
0.154.01	paper for large bead frame 50 sheets (2)
0.190.M0	box with 55 bead bars from 1 to 10, individual beads (order 2 boxes)
0.252.M0	introduction decimal system, individual beads (2)
0.260.00	box w wooden signs for addition, subtraction, multiplication, division, etc.
0.290.M0	snake game, addition, individual beads
0.291.M0	snake game, subtraction, individual beads
1.660.M0	wall frame for bead material
1.666.00	small fraction cabinet
3.101.01	clock exercises in box
3.102.00	clock and box with movable figures
3.105.00	rubber stamp of clock
9.124.00	ten weights in a wooden storage box
9.128.B0	balance scale, metal

NOTE: New items (not on order sheets published before February 1990)

0.081.A0	units cup, golden color
0.084.AM	one golden bead square
0.252.A1	introduction decimal system, tray alone

CURRICULUM SUPPORT MATERIALS

5.580.00	numerals 0 to 10 (6)
5.582.00	stamp exercise paper, 6 problems (2)
5.583.00	stamp exercise paper, 15 problems (2)
5.586.00	beginning math paper (3)
5.587.00	chart problem paper (2)
5.588.00	circle problem paper (2)
5.595.21	addition tables booklet 1, per 40 (2)
5.595.22	addition tables booklet 2, per 40
5.595.23	addition tables booklet 3, per 40

5.595.31 subtraction tables booklet 1, per 24 (3)
5.595.32 subtraction tables booklet 2, per 40
5.595.33 subtraction tables booklet 3, per 40
5.595.41 multiplication tables booklet 1, per 40 (2)
5.595.42 multiplication tables booklet 2, per 40
5.595.43 multiplication tables booklet 3, per 40
5.595.50 division tables paper per ream
5.595.51 division tables booklet, per 5 (6)
5.596.00 quadrille paper 1" sq. 8.5x6" (4)
5.597.00 quadrille paper 1" sq. 8.5x11" (4)
5.598.00 quadrille paper 3/4" sq. 5.5x8" (4)
5.599.00 quadrille paper 3/4" sq. 8.5x8.5"
5.600.00 quadrille paper 3/4" sq. 8.5x11" (4)
5.601.00 quadrille paper 1/2" sq. 3x5.5" (3)
5.602.00 quadrille paper 1/2" sq. 5.5x5.5"
5.603.00 quadrille paper 1/2" sq. 8.5x11" (4)
5.605.00 fraction labels
5.606.00 fraction problems

MATHEMATICS FOR THE PRESCHOOL
OTHER MATERIALS TO BUY

Note: All baskets, cups and trays are available from Montessori Services.

baskets for:
  4 sets addition problems (put a red rim around the baskets)
  2 sets subtraction problems (put a green rim around the baskets)
  3 sets multiplication problems (put a yellow rim around the baskets)
  2 sets division problems (put a blue rim around the baskets)
  bead bars for multiplication with bead bars (large basket)
  memory game of numbers
  bathroom scale in pounds
bowls:
  small, for formation of complex numbers with beads and cards
  to hold 99 units for the changing exercise in the collective exercises (2)
  2 large bowls (for up to 50 unit beads) for collective exercises
boxes:
  2 plastic, for 50 units for the collective exercises
  4 plastic, to hold small numeral cards (5.580.00) for collective exercises
  3 plastic, for fraction labels (5.605.00)
  5 plastic, for fraction problems (5.606.00)
    1 box for each operation
    1 box for a mixed set
clock with gears
cup for 81 beads for division memorization
English measure containers
English measure ruler
English measure weights, brass
felt mats for:
  teen boards
  ten boards
  addition snake game
  subtraction snake game
  multiplication with bead bars
ink pad
markers, washable, for the dot board (black and a color other than green, blue or red)
meter stick
metric ruler
money, real
paper
pencils, regular, for:
  stamp game
  dot game
  bead frames
  racks and tubes
  fractions
  memorization exercises
pencils, colored for:
  division memorization, red
  dot game (not green, blue or red)
ribbons for:
  spindle boxes (could also use rubber bands)
  division with the collective exercises, 18 bows of
green, 9 each of blue and red
rulers, 6 inch, for:
  stamp game
  division memorization
thermometer in Fahrenheit
tickets, folded problem:
  4 sets addition (on red card stock)
  2 sets subtraction (on green card stock)
  3 sets multiplication (on yellow card stock)
  2 sets division (on blue card stock)
  1 set mixed on white card stock
trays, 2 large for collective exercises
yardstick

MATHEMATICS FOR THE PRESCHOOL

MATERIALS TO MAKE

word problems

MATHEMATICS FOR THE ELEMENTARY
ACTIVITIES AND MATERIALS OVERVIEW

I. INTRODUCTION
Great Lesson - The Story of Numbers
charts (handmade)

II. EARLY WORK: CONCEPTS, PROPERTIES, NUMERATION

A. Numbers to 1,000,000
0.132.A0 geometrical representation of the hierarchy of numbers
card material (handmade) in long wicker basket

B. Commutative and Distributive Laws
0.070.A0 box for small number cards (2)
0.071.C0 small number cards 1-9000 (2)
0.074.00 individual wooden hundred square (45)
0.075.00 individual thousand cube (12)
0.076.M0 box with 45 golden ten bars, indiv. beads (3)
0.077.M0 plastic box containing 100 unit beads, like individual beads
0.081.00 wooden tray with unit cup (3)
0.138.B0 box of color coded plastic chips (3) (may be handmade)
0.190.M0 bead stair in sectioned box, 55 of each bar
0.260.00 box with arithmetic signs (may be handmade)
bowl (to hold up to 100 unit beads)
envelopes, small manilla
felt mat
paper slips in basket
parentheses (handmade)

C. Multiples
0.086.B0 boxes, 20, with arrows for 0.086.M0
0.086.M0 complete set bead material, individual beads
0.159.01 multiple sheets, tables A and B
0.160.01 factor sheets, table C
0.161.01 multiple paper
0.190.M0 box with 55 bead bars from 1 to 10 (3)
1.666.M0 frame for complete bead material
control charts for calculation of multiples (tables A, B, C) (handmade)
felt mat
multiple charts (handmade)
paper, plain
pencils, colored

D. Factors
0.135.00 peg board (3)
0.136.00 pegs for 0.135.00 (3)
paper
pencil
strips, grey (handmade) in long wicker basket
tickets, white (handmade)
word problems

E. Lowest Common Multiple
0.135.00 peg board (3) (as above)
0.136.00 pegs for 0.135.00 (3) (as above)
small white strips in long wicker basket
paper
pencil
word problems (handmade)

F. Greatest Common Factor
0.135.00 peg board (3) (as above)
0.136.00 pegs for 0.135.00 (3) (as above)
blank tickets in basket
pencil
strips, grey, in long wicker basket
word problems (handmade)

G. Divisibility
0.074.00 individual wooden hundred square (45) (as above)
0.075.00 individual thousand cube (12) (as above)
0.076.M0 box with 45 golden ten bars, individual beads (3) (as above)
0.077.M0 plastic box containing 100 unit beads, like individual beads (as above)
0.081.00 wooden tray with unit cup (3) (as above)
bowl (to hold up to 100 unit beads)
felt mat
notebook, small
paper
pencil
word problems (handmade)

H. Measurement:
1. History of Measurement - illustrations as necessary
2. Decimal Fraction Board
   0.140.01 decimal fraction board
   tickets (handmade) in container
3. Length:
   English measure ruler
   meter stick
   metric ruler
   yardstick
4. Liquid Volume:
   English measure containers
   metric containers (1000 ml, 100 ml, 10 ml)
5. Weight:
   9.124.0 ten weights in a wooden storage box
   9.128.B0 balance scale, metal
   bathroom scale in kilograms
   bathroom scale in pounds
   English measure weights, brass
6. Temperature:
   thermometers in Celsius
   thermometers in Fahrenheit

7. Clock:*
    - 3.101.01 clock exercises in box
    - 3.102.00 clock and box with movable figures
    - 3.105.00 rubber stamp of clock
    - clock with gears
    - ink pad
    - paper
8. Angles:
    - 0.114.00 fraction circles
    - 0.114.A0 stand for fraction circles
    - 0.124.00 instrument for measurement of angles
    - 0.125.00 instrument for reduction of common fraction into decimal fractions
    - 1.665.00 large fraction cabinet
9. Money:
    - money, real, preferably from several different countries
    - newspaper - with exchange rates
10. Word Problems, for all measurement categories listed above (handmade)

III. OPERATIONS: FIRST WORK

A. Long Multiplication

1. Large Bead Frame
    - 0.094.00 large bead frame (3)
    - 0.154.01 large bead frame paper per 50 (6)
    - pencils:
        - red
        - regular
2. Flat Bead Frame
    - 0.099.00 flat bead frame (2)
    - 0.138.B0 box of color coded chips (2) (may be handmade)
    - 7.701.00 scissors with rounded point - 10.4 cm. or
    - 7.702.00 scissors with sharp point 10.4 cm.
    - 7.708.00 six scissor storage block
    - paper, regular
    - pencil
    - white strips of paper in long wicker basket
3. Bank Game
    - 0.073.00 bank game (2)
    - 0.138.B0 box of color coded plastic chips (2) (may be handmade, as above)
    - grey cards with double zero (hand made)
4. Checkerboard
    - 0.137.01 checkerboard (2)
    - 0.138.M0 box with 20 sets bead bars from 1 to 9 and small plastic numbers (2)
    - paper:
        - graph
        - plain
    - pencils:
        - colored (green, blue, red)
        - regular
    - straightedge

B. Long Division

1. Long Division Material
    - 0.095.00 long division material (2)
    - 0.095.A0 replacement tubes (10)
    - 0.095.B0 plastic box containing 100 green beads (for replacement)
    - 0.095.B1 plastic box containing 100 blue beads (for replacement)
    - 0.095.B2 plastic box containing 100 red beads (for replacement)
    - paper:
        - graph
        - plain
    - pencil
2. Stamp Exercise
    - 0.082.00 stamp exercise
    - 5.596.00 1" square, 8.5" x 6"
    - 5.597.00 1" square, 8.5" x 11"
    - 5.598.00 3/4" square, 8.5" x 8"
    - 5.600.00 3/4" square, 8.5" x 11"
    - 5.603.00 1/2" square, 8.5" x 11"
    - cardboard, strips, in long wicker basket
    - pencil
    - ruler
    - tickets, blank

C. Squares and Cubes of Numbers

- 0.086.M0 complete set bead material, individual beads (as above)
- 0.190.M0 box with 55 bead bars from 1 to 10, individual beads (3) (as above)
- 1.666.M0 frame for complete bead material (as above)
- envelops, 10, containing labeled squares and rectangles for numerical decanomial (handmade)
- felt mat
- paper:
    - graph (8-1/2" x 11") and (22"x28")
    - plain
- pencils:
    - colored
    - regular
- tickets, blank

*These exercises are included for the children who did not master them in their preschool class.

IV. FRACTIONS

0.097.00	skittles (as above)
0.113.00	fraction skittles (as above)
0.113.A0	stand for fraction skittles (as above)
0.114.00	fraction circles (as above)
0.114.A0	stand for fraction circles (as above)
0.124.00	instrument for measurement of angles (as above)
0.135.00	peg board (as above)
0.136.00	pegs for 0.135.00 (as above)
0.185.00	box with 5 sets red plastic fraction circles
1.665.00	fraction cabinet (as above)
5.605.00	fraction labels (in pull drawer cabinet)
5.606.00	fraction problems (in pull drawer cabinet)
5.607.10	fraction equivalence research sheets
7.701.00	scissors with rounded point - 10.4 cm., or
7.702.00	scissors with sharp point 10.4 cm.
7.708.00	six scissor storage block
	fraction charts (handmade)
	marker, black, that will mark on plastic
	paper:
	graph
	plain paper
	pencil
	plastic, clear, for making grids
	problems (handmade) (in pull drawer cabinet)
	other problems
	word problems
	straightedge
	strips, black, of cardboard in long wicker basket
	tickets, blank, or white strips of paper and scissors in basket

V. DECIMAL FRACTIONS

0.073.00	bank game (cards from)
0.097.00	skittles *(Note: use some as they are, paint a few others light blue, pink, and light green)*
0.114.00	fraction circles (as above)
0.114.A0	stand for fraction circles (as above)
0.125.00	instrument for reduction of common fractions to decimal fractions
0.138.M0	box with 20 sets bead bars from 1 to 9 and small plastic numbers (as above)
0.139.01	decimal fractions (wooden beads and cards for use with 0.140.00)
0.140.01	decimal board (as above)
0.182.01	decimal checkerboard
1.665.00	fraction cabinet (as above)
	"candelabra" (handmade)
	"crown" (handmade)
	felt mat
	felt squares
	fraction strips, 3 (handmade)
	paper:
	graph
	plain
	pencil
	paper discs, small, black (handmade)
	"propeller" (handmade)
	tickets, blank, or strips of white paper and scissors in long wicker basket
	zero cards, grey decimal (handmade)

VI. OPERATIONS CONTINUED

A. Squaring

0.060.A3	small movable alphabet, red, USA (same as listed under language)
0.060.A4	small movable alphabet, yellow, USA (same as listed under language)
0.060.A5	small movable alphabet, blue, USA (same as listed under language)
0.060.A6	small movable alphabet, green, USA (same as listed under language)
0.060.A7	small movable alphabet, black, USA (same as listed under language)
0.060.C2	box for small movable alphabet, print (5) (same as listed under language)
0.073.00	bank game (colored category cards 1-3000) (as above)
0.074.00	individual wooden hundred square (45) (as above)
0.075.00	individual thousand cube (12) (as above)
0.076.M0	box with 45 golden ten bars, individual beads (3) (as above)
0.077.M0	plastic box containing 100 unit beads, like individual beads (as above)
0.081.00	wooden tray with unit cup (3) (as above)
0.086.M0	complete set bead material, individual beads (bead squares) (as above)
0.095.B0	plastic box containing 100 green beads (as above)
0.095.B1	plastic box containing 100 blue beads (as above)
0.095.B2	plastic box containing 100 red beads (as above)
0.133.00	small square root board
0.134.00	patterns for square root
0.135.00	peg board (as above)
0.136.00	pegs for 0.135.00 (as above)
0.138.M0	box with 20 sets bead bars from 1 to 9 and small plastic numbers
0.260.00	box containing wooden arithmetic signs
1.666.M0	frame for complete bead material (as above)
5.604.00	one hundred circle paper
	felt mat
	graph paper
	pencils:
	colored
	regular
	rubber bands, colored
	tickets, blank

B. Cubing

0.086.M0	complete set bead material, individual beads (bead squares) (as above)
0.131.00	binomial cube
0.132.00	trinomial cube

0.138.M0	box with 20 sets bead bars from 1 to 9 (as above)
0.187.00	arithmetic trinomial cube
0.189.00	cube root material
1.666.M0	frame for complete bead material (as above)
	felt mat
	paper
	pencil
	tickets, blank, or strips of paper and scissors
	tickets/labels (handmade)

C. Square Root

0.074.00	individual wooden hundred square (9) (as above)
0.076.M0	box with 45 ten bars (as above)
0.077.M0	golden beads, 100, individual beads (as above)
0.086.M0	complete set bead material, individual beads (bead squares) (as above)
0.095.B0	plastic box containing 100 green beads (as above)
0.133.00	small square root board (as above)
0.134.00	patterns for square root (as above)
0.135.00	peg board (as above)
0.136.00	pegs for 0.135.00 (as above)
1.666.M0	frame for complete bead material (as above)
	chart for square root (handmade)
	cup for the green beads
	felt mat
	paper: thin strips in container regular
	pencil

D. Cube Root

0.187.00	arithmetic trinomial cube
0.188.A0	box with 250 cubes 2x2x2cm
0.189.00	cube root material (as above)
0.192.00	1000 cubes 1x1x1cm
	chart for cube root (handmade)
	felt mat
	paper
	pencil

VII. NEGATIVE NUMBERS

0.029.M0	negative bead bars
0.097.00	skittles (as above)
0.190.M0	box with 55 bead bars 1-10 (as above)
0.291.M0	snake game, subtraction
	cups, plastic, labeled with the negative sign
	felt mat
	paper
	parentheses (handmade) in container
	pencil
	tickets, blank, or white strips of paper and scissors in long wicker basket

VIII. POWERS OF NUMBERS

0.130.00	powers of two
0.132.A0	geometric representation of the hierarchy of numbers (as above)
0.189.00	cube root material (as above)
0.192.00	1000 cubes 1x1x1cm (as above)
	problem tickets (handmade)
	strips from the decimal board (handmade)
	tickets, blank or white strips of paper and scissors in long wicker basket

IX. OTHER BASE SYSTEMS

0.086.M0	complete set bead material (bead squares and cubes) (as above)
0.095.B0	plastic box containing 100 green beads (as above)
0.190.M0	bead stair in sectioned box, 55 of each bar (as above)
1.666.M0	frame for complete bead material (as above)
	boards for other base systems, 2 (handmade)

X. WORD PROBLEMS

This section includes word problems that are not included in other areas of the mathematics curriculum.

A. Distance, Velocity, Time

labels/tickets (handmade) in container

B. Percent, Interest

0.074.00	individual wooden hundred square (45) (as above)
0.075.00	individual thousand cube (12) (as above)
0.076.M0	box with 45 golden ten bars, individual beads (3) (as above)
0.077.M0	plastic box containing 100 unit beads, like individual beads (as above)
0.081.00	wooden tray with unit cup (3) (as above)
0.097.00	green skittles (as above)
	bowl (to hold up to 100 unit beads)
	chalk

XI. INTRODUCTION TO ALGEBRA

A. Ratio

0.190.M0	bead stair in sectioned box, 55 of each bar (as above)
	geography stamps
	labels/tickets (handmade)
	objects in the environment
	word problems (handmade)

B. Proportion

0.086.M0	complete set bead material (bead squares) (as above)
0.114.00	fraction circles (as above)
0.114.A0	stand for fraction circles (as above)
0.115.00	nine squares
0.116.00	four triangles

0.130.00	powers of two (as above)
0.135.00	peg board (as above)
0.136.00	pegs for peg board (0.135.00) (as above)
0.190.M0	bead stair in sectioned box, 55 of each bar (as above)
0.260.00	box with arithmetic signs (as above)
1.666.M0	frame for complete bead material (as above)

charts (handmade):
    garden
    water tank
felt mat
geography stamps
parentheses (handmade)
prepared tickets (handmade)
strips, cardboard (handmade) in long wicker basket
word problems (handmade)

PRESCHOOL MATERIALS SOMETIMES USED IN ELEMENTARY CLASSROOMS
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

Many of these materials are essentially preschool materials, but they may be found in some elementary classes. According to Dr. Montessori's advice, preschool materials should not be presented to elementary children except for very specific pieces which are to be given in such a way as to help fill any gaps in knowledge.

- A. **Concepts**
  - 1. Decimal System
    - 0.069.A0 box for large number cards (1)
    - 0.070.A0 box for small number cards (6)
    - 0.070.C0 small number cards 1-3000, printed on plastic (2)
    - 0.071.C0 small number cards 1-9000, printed on plastic (4)
    - 0.072.C0 large number cards 1-9000, printed on plastic (1)
    - 0.074.00 wooden squares (45)
    - 0.075.00 wooden cubes (12)
    - 0.076.M0 golden bead 10 bars (3 boxes)
    - 0.077.M0 plastic box containing 100 unit beads, like individual beads
    - 0.081.00 wooden tray (3)
  - 2. Stamp Exercise
    - 0.082.00 stamp exercise
    - 5.582.00 stamp exercise paper 6 problems
    - 5.583.00 stamp exercise paper 15 problems
  - 3. Dot Exercise
    - 0.050.A0 dot exercise sheets
  - 4. Hundred Board
    - 0.180.00 hundred board
    - 0.157.00 control chart for 100 board
  - 5. Small Bead Frame
    - 0.093.00 small bead frame (2)
    - 0.153.01 small bead frame paper per 50 (3)
  - 6. Skip Counting
    - 0.086.B0 boxes, 20, with arrows for bead material
    - 0.086.M0 complete bead material, individual beads
    - 1.666.M0 frame for complete bead material
  - 7. Curriculum Support Material
    - 5.584.00 math function command cards
- B. **Memorization**
  - 1. Addition
    - a. Snake Game
      - 0.090.M0 short bead stair box containing 5 of each bead bar (2) for replacments
      - 0.091.M0 black and white bead stairs, for replacements
      - 0.290.M0 snake game, addition, individual beads
      - felt mat
    - b. Addition Strip Board With Control Charts I and II
      - 0.092.00 addition strip board with strips
      - 0.142.A0 addition charts including blank chart and box of answers (control charts only)
      - 5.587.00 chart problem paper
      - 5.588.00 circle problem paper
      - 5.595.21 addition tables booklet 1, per 40 (2)
      - 5.595.22 addition tables booklet 2, per 40
      - 5.595.23 addition tables booklet 3, per 40
      - folded slips of paper of addition problems (handmade) in pull drawer cabinet
    - c. Charts III, IV, V, VI (blank)
      - 0.142.A0 addition charts including the blank chart and box of answers (finger charts, blank chart, box ofanswers) (as above)
      - 0.142.F1 four boxes with chips of problems with answer tiles
      - 0.190.M0 bead stair in sectioned box, 55 of each bar
      - 5.586.00 beginning math paper
      - 5.587.00 chart problem paper
      - 5.588.00 circle problem paper
      - 5.589.10 place holder problems box-middle (in pull drawer cabinet)
      - 5.590.10 place holder problems box-first (in pull drawer cabinet)
      - 5.591.00 commutative problems (in pull drawer cabinet)
      - 5.594.10 >=< problem sets in pull drawer cabinet
      - 5.595.10 >=< blank problem paper
      - 5.596.00 quadrille paper 1" sq. 8.5x6"
      - 5.598.00 quadrille paper 3/4" sq. 5.5x8"
      - 5.599.00 quadrille paper 3/4" sq. 8.5" x 8.5"
      - 5.601.00 quadrille paper 1/2" sq. 3 x 5.5"
      - addition problems, folded slips of paper (handmade) in container
      - addition problems, other special cases, tables (handmade)
      - parentheses (handmade) in pull drawer cabinet
      - pencil
  - 2. Subtraction
    - a. Negative Snake
      - 0.029.M0 negative bead bars
      - 0.291.M0 snake game, subtraction, individual beads
      - felt mat
    - b. Negative Strip Board
      - 0.092.A0 subtraction strip board with strips

- 5.595.31 subtraction tables booklet 1, per 24 (3)
- 5.595.32 subtraction tables booklet 2, per 40
- 5.595.33 subtraction tables booklet 3, per 40
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- folded slips of paper of subtraction problems (handmade) (in pull drawer cabinet)
- pencil

c. Subtraction Charts I and II
- 0.142.B0 subtraction charts including the blank chart and box of answers
- 0.142.F1 four boxes with chips of problems with answer tiles (as above)
- 0.190.M0 bead stair in sectioned box, 55 of each bar (as above)
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- 5.589.10 place holder problems box-middle (in pull drawer cabinet) (as above)
- 5.590.10 place holder problems box-first (in pull drawer cabinet) (as above)
- 5.594.10 >=< problem sets (in pull drawer cabinet) (as above)
- 5.586.00 beginning math paper
- 5.596.00 quadrille paper 1' sq. 8.5x6"
- 5.598.00 quadrille paper 3/4" sq. 5.5x8"
- 5.600.00 quadrille paper 3/4" sq. 8.5" x 11"
- 5.601.00 quadrille paper 1/2" sq. 3x5.5"
- parentheses (handmade) in pull drawer cabinet
- problem tickets:
- problems, subtraction (handmade) (in pull drawer cabinet)
- other special cases, tables (handmade)
- strips of paper and scissors in long wicker basket

d. Subtraction Chart III (Blank)
- 0.142.B0 subtraction charts including the blank chart and box of answers (as above)
- 0.142.F1 four boxes with plastic chips (of problems with answer tiles) (as above)
- folded slips of paper of subtraction problems (handmade)(in pull drawer cabinet)

3. Addition and Subtraction
- 5.592.00 missing sign of the operation problems in pull drawer cabinet
- 5.593.00 missing sign paper
- 5.594.10 >=< problem sets in pull drawer cabinet (as above)
- 5.595.10 >=< blank problem paper
- twelve ways to write three numbers
- handmade tickets
- special paper

4. Multiplication

a. With Bead Bars
- 0.076.M0 box with 45 golden ten bars, individual beads (5 boxes)
- 0.186.00 table of Pythagoras
- 0.190.M0 box with 55 bead bars from 1 to 10, individual beads (2)
- 0.191.00 printed forms for decanomial (2)
- 5.591.00 commutative problems (in pull drawer cabinet) (as above)
- algebraic decanomial (handmade) in envelopes
- felt cloth, yellow
- numerical decanomial (handmade) in envelopes

b. Multiplication Board
- 0.087.00 multiplication board, cards in box, 100 beads in box
- 0.142.C4 multiplication charts with blank chart and box of answers
- 5.595.41 multiplication tables booklet 1, per 40 (2)
- 5.595.42 multiplication tables booklet 2, per 40
- 5.595.43 multiplication tables booklet 3, per 40
- pencil

c. Multiplication Charts III, IV and V (blank)
- 0.142.C4 multiplication charts including the blank chart and box of answers (as above)
- 0.142.F1 four boxes with plastic chips (of problems with answer tiles) (as above)
- 0.157.A0 control chart for Pythagoras board
- 0.181.00 Pythagoras board
- 5.586.00 beginning math paper
- 5.587.00 chart problem paper
- 5.588.00 circle problem paper
- 5.589.10 place holder problems box-middle (in pull drawer cabinet) (as above)
- 5.590.10 place holder problems box-first (in pull drawer cabinet) (as above)
- 5.594.10 >=< problem sets (in pull drawer cabinet) (as above)
- 5.595.10 >=< blank problem paper
- 5.596.00 quadrille paper 1" sq. 8.5x6"
- 5.597.00 quadrille paper 1" sq. 8.5x11"
- 5.598.00 quadrille paper 3/4" sq. 5.5x8"
- 5.599.00 quadrille paper 3/4" sq. 8.5x8.5"

5.600.00 quadrille paper 3/4" sq. 8.5x11"
5.601.00 quadrille paper 1/2" sq. 3x5.5"
5.602.00 quadrille paper 1/2" sq. 5.5x5.5"
5.603.00 quadrille paper 1/2" sq. 8.5x11"
parentheses (handmade) (in pull drawer cabinet)
pencil
problem tickets:
multiplication problems (handmade) (in pull drawer cabinet)
other special cases, tables (handmade)
tickets for changing 1st control chart to 2nd (handmade) (in pull drawer cabinet)

5. Division
  a. Unit Division Board
    0.096.A0 division board with skittles and beads
    5.595.50 division tables per ream
    5.595.51 division tables booklet 5
    cup (to hold 81 beads)
    paper for dividend, divisor, quotient, remainder
    pencils:
      red
      regular
  b. Multiplication and Division
    0.138.M0 box containing 20 sets of bead bars from 1 to 9, individual beads
    5.592.00 missing sign of the operation problems (in pull drawer cabinet) (as above)
    5.593.00 missing sign paper
    5.594.10 >=< problem sets (in pull drawer cabinet) (as above)
    5.595.10 >=< blank problem paper
    twelve ways to write three numbers (handmade tickets and paper)
  c. Division Chart I and II
    0.142.D1 division charts including the blank chart and box of answers.
    0.142.F1 four boxes with chips of problems with answer tiles (as above)
    5.597.00 quadrille paper 1" sq. 8.5x11"
    5.600.00 quadrille paper 3/4" sq. 8.5x11"
    5.603.00 quadrille paper 1/2" sq. 8.5x11"
    pencil
    tickets, division problems (handmade), with remainders (in pull drawer cabinet) without remainders (in pull drawer cabinet)
    special cases, tables (handmade)

6. Addition, Subtraction, Multiplication and Division
    5.592.00 missing sign of the operation problems in pull drawer cabinet
    5.593.00 missing sign paper
    5.594.10 >=< problem sets in pull drawer cabinet
    5.595.10 >=< blank problem paper
    twelve ways to write three numbers (handmade tickets and paper)

MATHEMATICS FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.029.M0	negative bead bars
0.060.A3	small movable alphabet, red, USA (same as listed under language)
0.060.A4	small movable alphabet, yellow, USA (same as listed under language)
0.060.A5	small movable alphabet, blue , USA (same as listed under language)
0.060.A7	small movable alphabet, black, USA (same as listed under language)
0.060.C2	box for small movable alphabet, print (4) (same as listed under language)
0.070.A0	box for small number cards (7)
0.071.C0	small number cards (1-9000) printed on plastic (3)
0.073.00	bank game (2 sets)
0.074.00	wooden hundred squares (45)
0.075.00	wooden thousand cubes (12)
0.076.M0	golden bead ten bars (3)
0.077.M0	plastic box containing 100 golden beads, like individual beads
0.081.00	wooden tray with unit cup (3)
0.082.00	stamp exercise
0.086.B0	twenty boxes with arrows for 0.086.M0
0.086.M0	complete set bead material, individual beads
0.091.M0	black and white bead stairs
0.094.00	large bead frame (3)
0.095.00	long division material (2)
0.095.A0	replacement tubes (10)
0.095.B0	plastic box containing 100 green beads (2)
0.095.B1	plastic box containing 100 blue beads
0.095.B2	plastic box containing 100 red beads
0.097.00	skittles (50 green, 25 blue, 25 red) (2)
0.099.00	flat bead frame (2)
0.113.00	fraction skittles
0.113.A0	stand for fraction skittles
0.114.00	fraction circles
0.114.A0	stand for fraction circles
0.115.00	nine squares
0.116.00	four triangles
0.124.00	instrument for measurement of angles
0.125.00	instrument for reduction of common fractions into decimal fractions
0.130.00	powers of two
0.131.00	binomial cube
0.132.00	trinomial cube
0.132.A0	geometrical representation of the hierarchy of numbers
0.133.00	small square root board
0.134.01	patterns for square root
0.135.00	peg board (3)
0.136.00	pegs for 0.135.00 (3)
0.137.01	checkerboard (2)
0.138.B0	box of color coded plastic chips (5)
0.138.M0	bead stair in sectioned box, 20 of each bar (4)
0.139.01	decimal fractions (wooden beads and cards for use with 0.140.00)
0.140.01	decimal fraction board (yellow decimal board)
0.154.01	paper for large bead frame/50 (at least 6)
0.159.01	multiple sheets A and B
0.160.01	factor sheets
0.161.01	multiple paper
0.182.01	decimal checkerboard
0.185.00	box with 5 sets red plastic fraction circles
0.186.00	table of Pythagoras
0.187.00	arithmetical trinomial cube
0.188.A0	box with 250 cubes 2x2x2cm.
0.189.00	cube root material
0.190.M0	bead stair in sectioned box, 55 of each bar (3)
0.192.00	box with 1000 cubes 1x1x1cm.
0.195.01	clear plastic envelopes (25)
0.195.B0	container with vertical divisions
0.260.00	box with arithmetic signs (3)
0.291.M0	snake game, subtraction
1.665.00	large fraction cabinet
1.666.M0	frame for complete bead material
3.101.00	clock exercises in box
3.102.00	clock and box with movable figures
3.105.00	rubber stamp of clock
7.317.00	pencil holders (10)
7.701.00	scissors with rounded point - 10.4 cm. (6) (see language) or
7.702.00	scissors with sharp point - 10.4 cm. (6) (see language)
7.708.00	six scissor storage block (see language)
9.124.00	ten weights in wooden storage box
9.128.B0	balance scale, metal

CURRICULUM SUPPORT MATERIALS

5.596.00	quadrille paper 1" sq. 8.5 x 6" (4)
5.597.00	quadrille paper 1" sq. 8.5 x 11" (4)
5.598.00	quadrille paper 3/4" sq. 5.5 x 8" (4)
5.599.00	quadrille paper 3/4" sq. 8.5 x 8.5" (4)
5.600.00	quadrille paper 3/4" sq. 8.5 x 11" (4)
5.601.00	quadrille paper 1/2" sq. 3 x 5.5" (3)
5.602.00	quadrille paper 1/2" sq. 5.5 x 5.5" (2)
5.603.00	quadrille paper 1/2" sq. 8.5 x 11" (4)
5.604.00	one hundred circle paper (2)
5.605.00	fraction labels
5.606.00	fraction problems
5.607.10	fraction equivalence research sheets

MATHEMATICS FOR THE ELEMENTARY

OTHER MATERIALS TO BUY

- baskets:
  - long wicker, for 8" paper strips (Montessori Services)
  - assorted sizes and shapes for blank tickets, labels, etc.
- bowl (to hold 100 unit beads)
- boxes, plastic, for word problems, tickets, etc. (Montessori Services)
- cabinets, pull drawer, for problems
- chalk
- clock
- colored felt mats
  - 15"x30" 2 yellow, 1 green, 1 blue
  - 30"x30" yellow
- cups, clear plastic
  - labeled with negative sign (2)
  - or green unit beads (1)
- envelopes:
  - manilla:
    - 3"x5-1/2" (6)
    - 3-1/2"x6-1/6" (20)
  - white:
    - 3-1/2"x6-1/2" (2)
- felt mats, plain colors:
  - yellow
  - blue
  - etc.
- felt squares (3 inches square)
  - red, blue, green, pink, light blue, light green
- geography stamps
- liquid volume:
  - metric containers (1000 ml, 100 ml, 10 ml)
  - English containers
- magic marker, black, with fine point, to write on clear plastic
- meter stick
- money:
  - USA
  - foreign
- napkin holders or other holders for envelopes (not listed in curriculum outline)
- newspapers (with exchange rates)
- notebooks, small
- paper:
  - plain
  - graph (8-1/2" x 11" and 22" x 28")
- pencils:
  - regular
  - colored
- plastic, clear
- pull drawer cabinets, for tickets, labels, etc.
- rubber bands, colored
- rulers:
  - English
  - metric
- scale, balance with sets of:
  - English weights
  - metric weights
- scales, bathroom
  - pounds
  - kilograms
- scissors
- stacking trays, 9"x16" (10) for holding various kinds of papers (not mentioned in curriculum outline)
- straightedge
- thermometers:
  - Celsius
  - Fahrenheit
- trays, for scissors, containers with tickets, etc. (not mentioned in curriculum outline)
- yardstick

MATHEMATICS FOR THE ELEMENTARY
MATERIALS TO MAKE

- boards for number bases (2)
- charts, (handmade)
  - control charts for calculation of multiples (tables A, B, C)
  - garden chart with 2 pick axes
  - history of numbers
  - multiple charts
  - squaring and cubing
  - water chart
  - history of measurement (find or make as many as needed for the story)
- crown, silver colored
- decanomial:
  - numerical
  - algebraic
- envelopes, 10, containing labeled squares and rectangles for numerical decanomial
- fraction charts (handmade)
- fraction strips, 3 different
- label cards/tickets:
  - binomial cube, algebraic
  - blank
  - changing 1st multiplication control chart to 2nd
  - cubing
  - decimal zero cards for decimal fractions (grey)
  - double zero cards for bank game (grey)
  - factors
  - fractions
  - geometrical representation of the hierarchy of numbers
  - interest, percent
  - measurement
  - metric measures
  - ratio, proportion
  - squaring
  - trinomial cube, algebraic
  - trinomial cube, numerical
  - velocity, distance, time
  - twelve ways to write 3 numbers
- paper discs, small, black
- paper forms:
  - sectioned, for division (dividend, divisor, quotient, remainder)
  - twelve ways to write 3 numbers
- parentheses
- plastic pieces, clear, with black lines
- problem tickets:
  - fractions:
    - addition
    - subtraction
    - multiplication
    - division
  - special cases:
    - addition
    - subtraction
    - multiplication
    - division
- propeller (to illustrate decimals)
- strips:
  - paper, long white
  - cardboard, black , 4-1/2"x1/2" (11)
  - cardboard, grey, 8-1/2"x1/2" (13)
  - cardboard, 3, and "candelabra" for the yellow decimal board
- word problems:
  - distance, velocity, time
  - divisibility
  - factoring
  - fractions
  - GCF
  - interest, percent
  - LCM
  - measurement
  - ratio, proportion
  - etc.

CURRICULUM RESOURCES

GEOMETRY

INTRODUCTION

Presentations of geometry in Montessori follow the historical development of the subject. Since geometry began as a concrete experience with abstractions following at a later time, the children work through the same sequence. At the preschool level geometry is experienced sensorially through manipulation of both plane and solid geometric figures. Preschool geometric materials are listed in the Sensorial section. These materials foster a creative activity that involves two and three dimensional construction of various forms, artistic drawings and ornamentation. The foundation of the study of geometry is familiarity through sensorial experience during the preschool years. As much geometry nomenclature is supplied as the children are able to assimilate during their sensitive period for language acquisition so they will be ready for the geometry work at the elementary level.

Indirect preparation for geometry in mathematics includes sensorial exploration of cube-line-square-cube, and point-line-surface-solid in the work with the golden bead material and the bead cabinet. Geometry, arithmetic and algebra are interrelated in a Montessori environment as much as possible. Geometry is used in arithmetic and algebra as a clarifying device to reveal relationships and the logic of various mathematical and algebraic processes. The first general implication of geometry in multiplication is shown in the multiplication of a number by itself (geometric result is a square) and the multiplication of two different numbers (geometric result is a rectangle). This leads eventually to the logic involved in the extraction of square root and cube root. Children take great joy in intellectual activity of this kind during their elementary years.

Work in geometry makes use of the guided discovery approach so that the children can discover the relationships, theorems and formulae themselves. Research is showing that information gained in this manner seems to be more readily retained in long-term memory than information given to children and then memorized by them.

Geometry work is related to the historical development of geometry. As the children make their own discoveries, they are interested in learning about the people who first made those discoveries. Often this leads to the creation and production of dramatic plays about those discoveries.

Creative expression in art though geometry is an integral part of the study of geometry from beginning to end. The education of the eye and hand to shape, form and dimension is a necessary part of the education of the artistic individual.

In addition to the enjoyment children exhibit in the study of geometry, it also provides them with a stimulus for intellectual development by giving experience with logical reasoning, deduction, and the forming of abstractions.

Areas of work in geometry include:

1. Sensorial exploration of plane and solid geometric figures
2. Classified nomenclature for lines, angles and polygons
3. Equality, similarity and equivalence
4. Area
5. Volume

CURRICULUM RESOURCES

Each of the areas above begins with sensorial experience and proceeds to abstraction. The areas overlap and proceed in parallel fashion.

Jean K. Miller

GEOMETRY FOR THE ELEMENTARY

ACTIVITIES AND MATERIALS OVERVIEW

I. THE STORY OF GEOMETRY

II. PRELIMINARY EXERCISES

(Many of these exercises overlap with preschool geometry while others are more advanced.)

0.037.01	geometric cabinet
0.037.02	contents of geometric cabinet
0.038.00	demonstration tray
0.038.A0	contents of demonstration tray
0.039.00	geometric cards
0.040.00	cabinet with 6 compartments
0.045.00	circles, squares, triangles
0.045.A0	detective adjective triangle exercise (see language)
0.048.00	geometric solids
0.048.A0	bases with box
0.048.B0	basket for solids (2)
0.049.00	constructive triangles
0.049.F0	box with 12 blue triangles
5.608.00	geometric cabinet matching cards
5.609.00	geometric cabinet control chart
5.610.00	geometric cabinet labels
5.611.00	geometric cabinet advanced triangle labels
5.612.00	detective adjective exercise labels (see language)
5.613.00	commands for geometric cabinet
5.614.00	geometric forms and commands for Venn diagrams
5.615.00	commands for geometric solids
5.616.00	geometry terms illustrated
	geometric cabinet number 2 (unavailable at present)
	spirograph
	tangrams

III. EQUAL - SIMILAR - EQUIVALENT

A. Concept With Iron Material

0.115.00	squares, 9 plates
0.116.00	triangles, 4 plates
1.665.00	large fraction cabinet
	geometric cabinet number 2 (unavailable at present)
	geometry charts (handmade)
	paper
	paper strips and scissors or blank tickets (handmade)
	pencil

B. Concept With Constructive Triangles

0.049.00	constructive triangles (as above)
0.049.F0	blue triangles, 12 identical
	geometry charts (handmade)

IV. INTRODUCTION TO POLYGONS

0.194.00	box with geometrical sticks
0.194.A0	large working board for geometrical sticks
	nomenclature materials (handmade)

V. ANGLES

0.114.00	fraction circles (see math)
0.114.A0	stands for fraction circles (see math)
0.124.00	instrument measurement angles (see math)
0.194.00	box with geometrical sticks (as above)
0.194.A0	large working board for geometrical sticks (as above)
1.665.00	large fraction cabinet (as above)
	carpenter's square
	compass
	nomenclature materials (handmade)
	paper:
	plain, large sheets
	regular, 8.5" x 11"
	pencils:
	colored (or crayons)
	regular
	protractor (full circle)
	push pins, different colors
	ruler

VI. INSCRIBED AND CIRCUMSCRIBED FIGURES

0.114.00	fraction circles
0.114.A0	stand for fraction circles
0.115.00	squares, nine plates
0.116.00	triangles, four plates
0.117.00	small triangle
0.117.A0	small trapezoid
0.118.00	inscribed and concentric figures
0.119.00	triangles inscribed in circle
1.665.00	large fraction cabinet (as above)
	paper
	pencil
	scissors

VII. LINES

0.194.00	box with geometrical sticks (as above)
0.194.A0	large working board for geometrical sticks (as above)
	carpenter's square
	child symbols, three pairs (handmade)
	food coloring
	nomenclature materials (handmade)
	transparent jars, large (2)
	water

VIII. EQUIVALENCE

0.049.00	constructive triangles (as above)
0.122.00	equivalent figures, 13 plates
0.123.00	Theorem of Pythagoras, 3 plates
1.665.00	large fraction cabinet (as above)
	geometry charts (handmade)
	triangles (handmade)

IX. POLYGONS AND CIRCLES

A. Polygons

0.049.00	constructive triangles (triangular box) (as above)

0.194.00	box with geometrical sticks (as above)
0.194.A0	large working board for geometrical sticks (as above)
	carpenter's square
	height stand for plane figures (handmade)
	nomenclature materials (handmade)
	plane geometric figures made of paper, different sizes and shapes
	triangles (handmade)
	quadrilaterals (handmade)
	polygons (handmade)

B. The Circle

0.114.00	fraction circles (see math)
0.114.A0	stands for fraction circles (see math)
0.119.00	triangle inscribed in circle
0.194.00	box with geometrical sticks (as above)
0.194.A0	large working board for geometrical sticks (as above)
1.665.00	large fraction cabinet (as above)
	nomenclature materials (handmade)
	paper circles of different sizes (handmade)

X. AREA

A. Plane Figures

0.122.00	equivalent figures, 13 plates (as above)
0.127.00	yellow triangles for area
1.665.00	large fraction cabinet (as above)
	height stand for plane figures
	paper
	parentheses (handmade)
	pencil
	prepared tickets (handmade)

B. Circle

0.037.01 and 0.037.02	geometric cabinet and contents (as above)
0.114.00	fraction circles (see math)
0.114.A0	stands for fraction circles (see math)
0.118.00	material for inscribed and concentric figures
0.119.00	triangle inscribed in a circle
0.194.00	box with geometrical sticks (as above)
0.194.A0	large working board for geometrical sticks (as above)
1.665.00	large fraction cabinet (as above)
	carpenter's square
	chalk
	circles, paper, different sizes (handmade)
	newsprint
	pencil
	prepared tickets (handmade)
	rectangles, paper, different sizes (handmade)
	ruler (at least 18 inches)

C. Relationship Between Apothem to the Side of a Plane Figure

	paper
	paper polygons of different types, 3 sizes of each kind, each 10 times larger than the last (handmade)
	pencil
	ruler

XI. SOLID GEOMETRY

A. Prisms

0.024.00	pink tower (borrow from preschool)
0.188.00	calculation of volume set
0.192.00	wooden box containing 1000 cubes 1x1x1cm. (see math)
	tickets: blank (handmade) prepared (handmade)

B. Pyramid

0.128.00	set of 3 metal containers
	sand
	tickets: blank (handmade) prepared (handmade)

C. Solids of Rotation

0.037.01	geometric cabinet (as above)
0.037.02	contents of geometric cabinet (as above)
	equilateral cylinder - diameter and height the same (handmade)
	sand, fine grained
	shallow tray

D. Lateral and Total Area of Solids

0.048.00	geometric solids (as above)
0.048.B0	basket for solids (2) (as above)
0.049.00	constructive triangles (4 red equilateral triangles)(as above)
	chalk
	crayon
	icosahedron - 20 sided polygon (handmade)
	newsprint
	nomenclature cards for geometric solids (handmade)
	pencil
	plumb line
	pyramid made of straws with corresponding paper triangles (handmade)
	ruler, long
	yarn

GEOMETRY FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.024.00	pink tower (borrow from preschool class)
0.037.01	geometric cabinet
0.037.02	contents of geometric cabinet
0.038.00	demonstration tray
0.038.A0	contents of demonstration tray
0.039.00	geometric cards
0.045.00	circles, squares, triangles
0.045.A0	detective adjective triangle exercise (see language)
0.048.00	geometric solids
0.048.A0	bases with box
0.048.B0	basket for solids
0.049.00	constructive triangles
0.049.A0	empty rectangular box
0.049.F0	box with 12 blue triangles
0.114.00	fraction circles (see math)
0.114.A0	stands for fraction circles (see math)
0.115.00	nine squares (see math)
0.116.00	four triangles (see math)
0.117.00	small triangle
0.117.A0	small trapezoid
0.118.00	inscribed and concentric figures
0.119.00	triangle inscribed in circle
0.122.00	equivalent figures, 13 plates
0.123.00	theorem of Pythagoras, 3 plates
0.124.00	instrument measurement angles (see math)
0.127.00	yellow triangles for area
0.128.00	metal volume material
0.188.00	calculation of volume set
0.192.00	wooden box containing 1000 cubes 1x1x1cm. (see math)
0.194.00	box with geometrical sticks
0.194.A0	large working board for geometrical sticks
1.665.00	large fraction cabinet (see math)

CURRICULUM SUPPORT MATERIALS

5.608.00	geometric cabinet matching cards
5.609.00	geometric cabinet control chart
5.610.00	geometric cabinet labels
5.611.00	geometric cabinet advanced triangle labels
5.612.00	detective adjective exercise labels (see language)
5.613.00	commands for geometric cabinet
5.614.00	geometric forms and commands for Venn diagrams
5.615.00	commands for geometric solids
5.616.00	geometry terms illustrated

GEOMETRY FOR THE ELEMENTARY

OTHER MATERIALS TO BUY

- basket, small wicker
- box, cardboard, 9"x2"
- carpenter's square
- chalk
- compasses
- construction paper, colored
- crayons:
    - regular
    - fluorescent
- food coloring
- glass to hold soda straws
- glass jar, transparent, large (2)
- newsprint
- paper:
    - graph
    - lined
    - plain, 8.5" x 11"
    - plain, large
- pencil lead for protractors
- pencils:
    - regular
    - colored
- protractors (full circle)
- push pins, different colors
- rulers:
    - various sizes
    - one at least 18 inches
- sand
- scissors
- soda straws
- tangrams
- tapestry needle
- trays:
    - small, stacking
    - large, shallow
- yarn

GEOMETRY FOR THE ELEMENTARY
MATERIALS TO MAKE

- area of the circle
- child symbols, 3 pairs
- equilateral cylinder, diameter and height the same
- geometry charts, 61
- height stand for plane figures
- hexagons, 3 sizes
- icosahedron (20 sided polygon)
- nomenclature cards and booklets
- paper circles
- paper strips, 1"x8"
- parentheses
- plane geometric paper figures, different sizes and shapes:
    - circles
    - triangles
    - trapezoids
    - rectangles
    - other quadrilaterals
    - polygons
    - polygons, various types, 3 of each, each 10 times larger than the last
- plumb line
- polygons for the sum of angles
- pyramids made of soda straws with green and white triangles
- quadrilaterals for the sum of angles
- spirograph
- stories about geometry
- theorem of Pythagoras, extra triangles
- tickets:
    - blank
    - white paper, 1" square
    - letters, equal signs, addition signs, fraction line
    - formula of the area of a circle
- trapezoids
- triangles for the sum of angles

SCIENCE AND SOCIAL STUDIES

INTRODUCTION

Montessori understood that giving too much in a curriculum could have just as detrimental an effect on children's development as giving too little. Her goal was simply to provide a "means to development" so that children could use what they need for their self-development.

In the preschool, all of the areas traditionally called science and social studies are treated as language extensions into culture. Children are exposed to as many facts as possible concerning *What* and *Where*. When they enter the elementary, this fund of facts makes it possible for them to take off in further exploration of these areas rather than having to start at the beginning. As the "logical, reasoning" mind emerges, the children use the information in new ways, find the interrelationships between and among the various areas, and expand their knowledge. The elementary children want to deal with *Why, How* and *When*. The accumulation of facts in the preschool makes it possible for them to begin this new exploration immediately.

The elementary curriculum that has evolved (and continues to evolve) in the Montessori movement strikes a balance between the two extremes (of giving either too much or too little information) by providing a skeletal curricular framework that is both open-ended and interrelated.

Science and social science subjects such as anthropology, astronomy, biology, chemistry, economics, geography, geology, government, history, philosophy, physics, political behavior, political science, and sociology, are not broken down into separate subject matters, but are totally integrated within the curriculum. The development of historical understanding and skills in mathematics (including arithmetic, geometry and algebra), language, arts and crafts, music, gymnastics, etc., is integrated with the rest of the curriculum.

This totally integrated curriculum is referred to by Dr. Montessori as cosmic education. Cosmic education provides whole views of the integrated curriculum into which details may be placed in their relation to the whole. In this manner, education becomes a coherent whole rather than a conglomeration of unrelated bits of information. It serves the needs of both global and linear thinkers and helps each individual to relate his or her predominant style of thinking to the other style.

Five "great lessons" set the stage for the presentation of this integrated curriculum. The stories deal with the development of the universe, solar system and earth, the development of life on earth, the coming of human beings, and the development of language and mathematics.

A short summary of the contributions of some of the particular disciplines within the curriculum is given below, followed by a more detailed description of the areas of history, geography, science and biology.

Montessori history follows the development of the universe, solar system, life on earth, the development of human beings, early civilizations, and recorded history. The child sees the long labor of humans to accomplish all that is here for us to enjoy in the present.

Montessori biology is structured in such a way as to give children a means of classification so they can structure and relate the facts of biology. The study should reveal that classification follows evolution. The ultimate goal is an ecological view of life and a feeling of responsibility for the environment.

CURRICULUM RESOURCES

The study of geography is designed to show how the physical configurations of the earth contribute to the history of all people. The study of physical geography is the basis for the study of economic geography — which shows the interdependence of all nations and people.

The first science experiments are designed to give children basic knowledge which will make possible the understanding of the development of the solar system, the earth and its configurations, life on earth, and the needs of plants and animals. Although each individual life on earth (both plant and animal) seems to be selfishly fighting for its own survival, each takes only what it needs and, in its turn, makes its contribution to the ecological whole.

Additional presentations on the development of language, mathematics, geometry, commerce, architecture, music and art, as well as the great revolutions (agricultural, urban, industrial, and information) all contribute to the unfolding of the human drama on earth.

The hoped-for result is that the children will see the struggle of life to develop itself. This struggle and long labor has benefited those children and each of them has a place in that development and a responsibility to further it.

One especially important material serves as an organizing center for the "Human Relations" curriculum. This is a chart entitled, "Fundamental Needs." It is introduced as early as possible in the elementary school. Preparation for it begins at the preschool level. Discussions around this chart help children see that the needs of human beings in all places on the earth and in all times in history are the same. When children can see that all human beings share the same needs, then they can respect and appreciate the variety of ways in which the needs are met. This emphasis on common needs helps in the development of a feeling of brotherhood and sisterhood with all peoples on earth.

In the study of history, the fundamental needs are used as a guide for the children's research into how people throughout history met those needs. In biology, the children look at the contribution of flora and fauna to the satisfaction of human needs. In geography, the children examine the influence of physical geography on meeting those needs as well as the influence of climate, seasons, natural resources, etc. The contributions of physics and science are also considered, as are the cultural manifestations of music and art.

The organizing center provided by the fundamental needs chart keeps the various areas of the curricula integrated, promotes an ecological view of life on earth, and helps children assume a responsible place in history.

HISTORY — THE FOUNDATION OF COSMIC EDUCATION

The study of history provides a chronological framework which gives order to information acquired in all other areas of study. In this way it provides the foundation for cosmic education. The study of geography, science, biology and all subjects related to them flow naturally out of the study of history. In the same way, any beginning point in any of the various subjects can flow naturally back to history or to any of the other areas as the children proceed with this interdisciplinary approach.

In order to enable children to study history, we must help them acquire both an understanding of the passage of time and the ability to conceptualize time in a linear fashion. This work begins in the preschool and lays the foundation for the work done in the elementary.

Preschool activities which contribute to a concept of the passage of time and its expression in linear form include various periodic activities such as weighing and measuring the children, birthday observations, measuring plants, drawing successive stages of plant growth, weighing animals, etc. These are best done on a regular basis if one of their purposes is to help children acquire an understanding of time.

Activities with a calendar may include keeping a daily record of the weather on a large calendar which shows a month at a time. Each day's passage may also be noted on calendars with tear off pages for each day. The pages which are torn off are attached to each other in a line. In the elementary this may be done with three different sized calendars. The resulting three lines will be different lengths; however, they all show the

CURRICULUM RESOURCES

passage of the same length of time. This will help the children understand that one can choose any unit of space to represent a period of time.

Telling time with a clock plays an important part in building a concept of time. When children can recognize the times on the hour and half hour, a clock with a rectified circumference may be used to show that the circumference of the clock may be stretched out to show time in a linear form. Then follows a series of time lines:

1. A 24 hour day with the hour as the unit of measurement
2. A week with the day as the unit of measurement
3. A month with the day as the unit of measurement
4. A child's life with the year as the unit of measurement. For each year there is one picture of the child and a short paragraph about an important occasion during the year. Parental help will be needed for this time line.
5. A chart showing the ages of the members of the child's family with the year as the unit of measurement (if parents will share this information)
6. A line of the child's life with the month as the unit of measurement (birthdays are prominently marked)
7. A time line for past, present and future which may be used for:
   sequence pictures (preschool)
   grammar exercises using tenses of the verb (elementary)
   events chart

Except for the last two exercises, the units of measurement represent progressively larger units of time in order to lead the child toward the time lines for the study of the development of life on earth and human history.

Then follows the B.C. — A.D. Time Line which goes from 2000 B.C. to A.D. 2000. It shows elementary age children how the years are numbered. Other ways of measuring time are also explored with the Jewish calendar and the Chinese calendar.

The study of geologic time or natural history begins in the elementary with the story of the beginning of the universe, the creation of the solar system and earth, the laws which determine the behavior of matter, and the changes that have taken place on earth. The Black Strip emphasizes the immensity of time the earth has existed, in relation to the amount of time human beings have existed. The Clock of the Eras shows the relative lengths of time of the different eras of earth history, and the Time Line of Life shows the development of life on earth up to the coming of human beings. These materials are impressionistic and do not give exact dates. Their purpose is to show the time it took to furnish the earth and to arouse the interest of the children to explore further.

Next comes the study of human beings from the time of their appearance on earth until written records appear. The study begins with the chart of the Fundamental Needs of Human Beings. Preparation for this chart begins in the preschool through the use of pictures in geography and with card material which illustrates the fundamental needs and the way the needs have been met over time. A few sets of these same cards are used by the elementary children with the time line from 10,000 B.C. to A.D. 2,000 The children then proceed to research and make their own cards for the time line.

Other materials used in this section include the Hand Chart, two time lines of human beings, and the History Question Charts.

The section concerning written history goes from the invention of writing to the present day. The study begins with the Great River Civilizations (Sumeria, Egypt, Indus Valley, the Shang Dynasty, Aztecs, Mayans, Incas) and then follows the development of Western civilization until it arrives at the state and local area in which the school resides. (If the school were in a non-western nation, the study would move from the Great River Civilizations to the nation in which the school was located.) History Question Charts continue to be used as do Migration Charts.

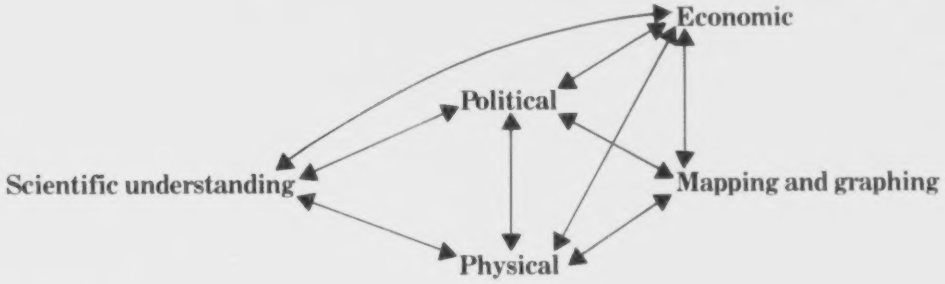
CURRICULUM RESOURCES

All of the great lessons described above are given during the early weeks of the fall semester. What follows in the way of lessons prepared by the teacher is a response to the children's interests. In addition, the study of the history of the state in which the school is located must be included if required by the state.

GEOGRAPHY

Introduction

The study of geography is composed of several different interconnecting areas which may be shown as follows:



The study of physical geography is related to political geography so that children will understand how the physical features of the land contribute to political boundries, location of cities, agriculture, etc. An understanding of physical and political geography gives children the basis for understanding the economics of each country. Mapping and graphing skills make it possible to record and analyze physical, political and economic geography.

One of the ultimate goals is to show the interdependence of human beings and nations and the greater good that comes through cooperation and peace rather than through self-interest and war.

BIOLOGY

Familarization with classification schemes found in biology provides another mental tool for ordering and relating information. An understanding of classification schemes also will be relevant later for computer programming.

In the preschool, opportunities are provided which familarize children with plants and animals, their needs, parts, and their relationships within a simple classification framework. The more information the children accumulate during their preschool years, the more facts they have to work with in the elementary as they pursue their natural interest in biology. When they reach the elementry age, new mental capabilities enable them to compare and contrast previously acquired information and to explore the facts of biology in a new way. Without this information they have to begin almost from scratch. This can be a time consuming process and it can become tedious when the children would have preferred to be using their new-found mental powers. The drive to use a new mental capability is the greatest when it is just emerging. When it is not allowed to be exercised, then it does not develop to its potential. For this reason it is important that children be enabled to acquire as much information as possible at the time in their lives when the acquisition of facts can be most easily accomplished. That time, when children can absorb information in a seemingly effortless manner, is during the preschool years.

SCIENCE AND SOCIAL STUDIES

CURRICULUM RESOURCES

With a base of real information and their new-found mental powers, elementary children go into a more detailed study of plants and animals, their needs and their relationships in both classification schemes and in an ecological sense.

Jean K. Miller

HISTORY FOR THE ELEMENTARY (Some Preschool)

ACTIVITIES AND MATERIALS OVERVIEW

I. NATURAL HISTORY

A. The Black Strip
- dowel
- strip, black (handmade)

B. Clock of the Eras
- chart (handmade)

C. Time Line of Life
- impressionistic charts
- fossils
- time line: (hand colored)
  - blank chart
  - full chart
  - separate pictures and labels

II. THE LINEAR MEASURMENT OF TIME

A. The Clock (preschool)*
- 3.101.01 clock exercise in box (see math)
- 3.102.00 clock and box with movable figures (see math)
- 3.105.00 rubber stamp of clock (see math)
- globe
- paper:
  - 5.5" x 5.5"
  - paper, roll (adding machine tape)
- pencils:
  - colored
  - regular
- wooden materials for telling time

B. Days of the Week (Preschool)*
- 5.541.00 naming days and months

C. Months of the Year (Preschool)*
- 5.541.00 naming days and months
- 5.626.00 calendar, blank
- calendars:
- blank calendar sheets in three sizes, one page per day
- light source
- twelve months on one long strip (handmade)
- twelve individual months (handmade)

D. Class Diary
- 5.626.00 calendar, blank
- paper
- pencil

E. History of Children's Names
- books which give history and meaning of names such as "What to Name the Baby"
- tickets (handmade)

F. Personal Time Lines
- glue
- paper:
  - blank
  - large sheets
  - one inch strips cut from lined paper
- pencils
- photographs
- quadrille paper

G. B.C. and A.D. Time Line
- adding machine tape
- pencils:
  - colored
  - regular
- symbol for division between B.C. and A.D.

III. PRE-HISTORY

A. The Hand Chart
- artifacts
- strip, black (handmade)

B. The First Time Line of Human Beings
- artifacts
- books•
- pictures

C. Fundamental Needs Charts
- impressionistic charts
- nomenclature materials (handmade)

D. Second Time Line of Human Beings
- artifacts

E. History Question Charts
- card material for one culture (handmade)
- charts

IV. WRITTEN HISTORY

A. The Growth of Culture
- impressionistic charts (migration charts)
- pictures

B. Study of Other Civilizations
- artifacts

C. Study of Child's Own Civilization
- American history time line
  - blank chart
  - full chart
  - movable pieces
- artifacts
- black strip (handmade)
- cards for history question charts
- original Americans chart (handmade)

**These exercises are included for the children who did not master them in their preschool classes.*

HISTORY FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.105.B0	command card box (Use for storage of card material. Quantity depends on amount of handmade material)(6)*
0.195.01	clear plastic envelopes (6)*
3.101.00	clock exercise in box (see math)*
3.102.00	clock and box with movable figures (see math)*
3.105.00	rubber stamp of clock (see math)*

CURRICULUM SUPPORT MATERIALS

5.626.00	calendar, blank*

---

* *These exercises are included for the children who did not master them in their preschool classes.*

HISTORY FOR THE ELEMENTARY CLASS
OTHER MATERIALS TO BUY OR FIND

- American history time line
- artifacts
- boxes:
    - cardboard
    - 3-1/2"x3-1/2"x1"
    - 7"x10"x1-1/2"
- calendars, in 3 sizes, page per day
- envelopes, small manilla
    - 3"x5-1/2"
    - 9"x12"
- file folders
- fossils
- ink pad, red ink
- paper, long rolls, for making time lines
- orange stick
- stapler
- trays
    - 5"x7-1/2"
    - 9-1/2"x12"

HISTORY FOR THE ELEMENTARY
MATERIALS TO MAKE

- calendar sheets, so children can make their own calendars
- charts
- months of the year on one long strip
- names of the children in the class and their meanings
- nomenclature materials
- time lines

GEOGRAPHY FOR THE PRESCHOOL

ACTIVITIES AND MATERIALS OVERVIEW

I. LAND AND WATER FORMS

A. Sandpaper Globe

0.230.00	sandpaper globe

B. Land and Water Form Models

developing trays, 5" x 7"
drying cloth
food coloring, blue
spoon
pitcher
clay or plasticine
oilcloth

C. Land and Water Form Cards

5.500.00	basic land and water forms (printed on card stock)

D. Land and Water Form Pictures

picture collections:
- islands
- lakes
- peninsulas
- gulfs
- isthmi
- straits
- capes
- bays
- archipelagos
- systems of lakes

E. Outline and Waterways Maps

1.626.00	map cabinet for paper maps
5.508.00	world maps, outlines only, 11"x17"
5.514.00	Africa outline
5.515.00	Africa waterways
5.517.00	Asia outline
5.518.00	Asia waterways
5.520.00	Australia outline
5.521.00	Australia waterways
5.523.00	Europe outline
5.524.00	Europe waterways
5.526.00	North America outline
5.527.00	North America waterways
5.529.00	South America outline
5.530.00	South America waterways
5.532.00	United States outline
5.533.00	United States waterways
	pencils, colored: red blue

F. World Maps with Land and Water Forms Marked

5.577.00	physical features of the world

G. Land and Water Form Definition Booklets and Cards

5.500.00	basic land and water forms (same as above)
5.501.00	land and water descriptions (same size as 5.500.00)

II. POLITICAL GEOGRAPHY

A. Colored Globe

0.231.00	colored globe

B. Puzzle Maps and Labels

0.176.F0	puzzle map of Africa
0.176.G0	puzzle map of Asia
0.176.H0	puzzle map of Australia
0.176.B0	puzzle map of Europe
0.176.C0	puzzle map of North America
0.176.E0	puzzle map of South America
0.176.A0	stand for puzzle maps
0.177.00	puzzle map of world
0.235.01	cards of the world parts
0.236.00	puzzle map of the U.S.A.
0.237.00	puzzle map of Canada
5.506.00	world maps, political boundaries, 17"x22"
5.509.00	world maps, political boundaries, 11"x17"
5.511.00	hemisphere maps and labels set
5.512.00	world unlabeled control map
5.512.10	world labeled control map
5.516.00	Africa political
5.519.00	Asia political
5.522.00	Australia political
5.525.00	Europe political
5.528.00	North America political
5.531.00	South America political
5.534.00	United States - state boundaries
5.537.00	compass directions
5.542.00	earth labels (for use with 5.511.00, 5.512.00, 5.512.10)
5.544.00	Africa labeled control map
5.545.00	Asia labeled control map
5.546.00	Australia labeled control map
5.547.00	Europe labeled control map
5.548.00	North America labeled control map
5.549.00	South America labeled control map
5.550.00	United States labeled control map
5.550.10	Canada labeled control map
5.551.00	Africa unlabeled control map
5.552.00	Asia unlabeled control map
5.553.00	Australia unlabeled control map
5.554.00	Europe unlabeled control map
5.555.00	North America unlabeled control map
5.556.00	South America unlabeled control map
5.557.00	United States unlabeled control map
5.557.10	Canada unlabeled control map
5.558.00	continent labels
5.559.00	Africa labels
5.560.00	Asia labels
5.561.00	Australia labels
5.562.00	Europe labels
5.563.00	North America labels
5.564.00	South America labels
5.565.00	United States labels

5.565.10	Canada labels
5.566.00	Africa country cards
5.567.00	Asia country cards
5.568.00	Australia country cards
5.569.00	Europe country cards
5.570.00	North America country cards
5.571.00	South America country cards
5.572.00	United States country cards
5.573.00	Continental United States and Alaska
5.578.00	cardboard maps of World, Africa, Asia, Australia, Europe, North America, South America, United States, 11"x14"

C. Geography Pictures

geography folders for each continent

artifacts from different continents and countries

D. Wooden Maps with Flags

0.179.01	four maps of Europe control map (handmade)
0.238.00	four maps of North America control map (handmade)
0.239.00	four maps of South America control map (handmade)

E. Flags

0.232.00	flag stand complete Asia
0.233.00	flag stand complete Europe
0.233.A0	flag stand complete North and South America
5.538.00	parts of the flag cards
5.539.00	flag paper
5.540.00	parts of the flag descriptions

III. MISCELLANEOUS

A. Days and Months

5.541.00	naming days and months
5.575.00	names of the months

B. Directions

5.537.00	compass directions

C. Hemispheres

5.542.00	Earth labels

GEOGRAPHY FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.176.F0	puzzle map of Africa
0.176.G0	puzzle map of Asia
0.176.H0	puzzle map of Australia
0.176.B0	puzzle map of Europe
0.176.C0	puzzle map of North America
0.176.E0	puzzle map of South America
0.176.A0	stand for puzzle maps
0.177.00	puzzle map of world
0.179.01	four maps of Europe
0.179.11	self-sticking name cards for Europe maps
0.230.00	sandpaper globe
0.231.00	colored globe
0.232.00	flag stand complete Asia
0.233.00	flag stand complete Europe
0.233.A0	flag stand complete North and South America
0.235.01	cards of the world parts
0.236.00	puzzle map of the U.S.A.
0.237.00	puzzle map of Canada
0.238.00	four maps of North America
0.238.04	self-sticking name cards for North America maps
0.239.00	four maps of South America
0.239.04	self-sticking name cards for South America maps
1.626.00	map cabinet for paper maps

Items not appearing on Nienhuis order sheets before January 1990

0.037.A4	knobs for maps and geometric insets
0.320.02	set of wooden pieces for repair of puzzle maps

GEOGRAPHY FOR THE PRESCHOOL
CURRICULUM SUPPORT MATERIALS

5.500.00	basic land and water forms
5.501.00	land and water descriptions
5.505.00	world maps, outlines only, 17"x22"
5.506.00	world maps, political boundaries, 17" x 22"
5.507.00	world maps, political boundaries & waterways-17"x22"
5.508.00	world maps, outlines only, 11"x17"
5.509.00	world maps, political boundaries, 11" x 17"
5.510.00	world maps, political boundaries & waterways-11"x17"
5.511.00	hemisphere maps and labels set
5.512.00	world unlabeled control map
5.512.10	world labeled control map
5.514.00	Africa outline
5.515.00	Africa waterways
5.516.00	Africa political
5.517.00	Asia outline
5.518.00	Asia waterways
5.519.00	Asia political
5.520.00	Australia outline
5.521.00	Australia waterways
5.522.00	Australia political
5.523.00	Europe outline
5.524.00	Europe waterways
5.525.00	Europe political
5.526.00	North America outline
5.527.00	North America waterways
5.528.00	North America political
5.529.00	South America outline
5.530.00	South America waterways
5.531.00	South America political
5.532.00	United States outline
5.533.00	United States waterways
5.534.00	United States political
5.537.00	compass directions
5.538.00	parts of the flag cards
5.539.00	flag paper
5.540.00	parts of the flag descriptions
5.541.00	naming days and months
5.542.00	Earth labels (for use with 5.511.00, 5.512.00, 5.512.10)
5.544.00	Africa labeled control map
5.545.00	Asia labeled control map
5.546.00	Australia labeled control map
5.547.00	Europe labeled control map
5.548.00	North America labeled control map
5.549.00	South America labeled control map
5.550.00	United States labeled control map
5.550.10	Canada labeled control map
5.551.00	Africa unlabeled control map
5.552.00	Asia unlabeled control map
5.553.00	Australia unlabeled control map
5.554.00	Europe unlabeled control map
5.555.00	North America unlabeled control map
5.556.00	South America unlabeled control map
5.557.00	United States unlabeled control map
5.557.10	Canada unlabeled control map
5.558.00	continent labels
5.559.00	Africa labels
5.560.00	Asia labels
5.561.00	Australia labels
5.562.00	Europe labels
5.563.00	North America labels
5.564.00	South America labels
5.565.00	United States labels
5.565.10	Canada labels
5.566.00	Africa country cards
5.567.00	Asia country cards
5.568.00	Australia country cards
5.569.00	Europe country cards
5.570.00	North America country cards
5.571.00	South America country cards
5.572.00	United States country cards
5.573.00	Continental United States and Alaska
5.575.00	names of the months
5.577.00	physical features of the world
5.578.00	cardboard maps of World, Africa, Asia, Australia, Europe, North America, South America, United States, 11"x14"

GEOGRAPHY FOR THE PRESCHOOL
OTHER MATERIALS TO BUY OR FIND

- artifacts from different countries
- clay or plasticine
- developing trays, 5" x 7"
- drying cloth
- food coloring, blue
- oilcloth
- pitcher
- pencils, colored
  - red
  - blue
- spoon

GEOGRAPHY FOR THE PRESCHOOL
MATERIALS TO MAKE

geography folders for each continent
- First folder (one for each continent) general pictures which show
  - fundamental needs of human beings
  - flora
  - fauna
- Second folder (one for each continent. 5 envelopes in each) which give more detail of the above
- Third folder (country in which school is located) general assortment as in the first folder
- Fourth folder (country in which school is located) classified around one topic
- *Later, folders three and four may be organized for different countries.*

land and water form models *(use earthy-colored clay or plasticine in 5" x 7" developing trays with pouring lips) Do not paint the forms. Make shapes which correspond to the forms in the land and water form cards (item no. 5.500.00).*

picture collections:
- islands
- lakes
- peninsulas
- gulfs
- isthmi
- straits
- capes
- bays
- archipelagos
- systems of lakes

GEOGRAPHY FOR THE ELEMENTARY
ACTIVITIES AND MATERIALS OVERVIEW

I. PRELIMINARY EXERCISES

0.105.B0	command box, natural finish (3) for command cards (5.502.00, 5.504.00) for parts of the flag (5.538.00, 5.540.00)
0.173.01	cabinet of maps of the world parts with flags, control map and self-sticking names
0.173.19	set of name cards, self-sticking (for control maps)
0.195.01	clear plastic envelopes (4) (for 5.500.00, 5.501.00)
0.195.B0	container with vertical divisions (5) for land and water forms (5.500.00, 5.501.00)
0.230.00	sandpaper globe (preschool)*
0.231.00	painted globe (preschool)*
0.232.00	stand with flags of Asia (preschool)*
0.233.00	stand with flags of Europe (preschool)*
0.233.A0	stand with flags of North and South America (preschool)*
1.626.00	map cabinet for 11" x 17" paper maps (4)
5.500.00	basic land and water forms
5.501.00	land and water descriptions
5.502.00	command cards, set 1
5.503.00	land and water form labels
5.504.00	command cards, set 2
5.505.00	world maps, outlines only, 17"x22"
5.506.00	world maps, political boundaries 17"x22"
5.507.00	world maps, political boundaries & waterways 17"x22"
5.508.00	world maps, outlines only, 11"x17"
5.509.00	world maps, political boundaries 11"x17"
5.510.00	world maps, political boundaries & waterways 11"x17"
5.511.00	hemisphere maps and labels set
5.512.00	world unlabeled control map
5.512.10	world labeled control map
5.514.00	Africa, outlines only, 11"x17"
5.515.00	Africa, waterways marked, 11"x17"
5.516.00	Africa, political boundaries, 11"x17"
5.517.00	Asia, outlines only, 11"x17"
5.518.00	Asia, waterways marked, 11"x17"
5.519.00	Asia, political boundaries, 11"x17"
5.520.00	Australia, outlines only, 11"x17"
5.521.00	Australia, waterways marked, 11"x17"
5.522.00	Australia, political boundaries, 11"x17"
5.523.00	Europe, outlines only, 11"x17"
5.524.00	Europe, waterways marked, 11"x17"
5.525.00	Europe, political boundaries, 11"x17"
5.526.00	North America, outlines only, 11"x17"
5.527.00	North America, waterways marked, 11"x17"
5.528.00	North America, political boundaries, 11"x17"
5.529.00	South America, outlines only, 11"x17"
5.530.00	South America, waterways marked, 11"x17"
5.531.00	South America, political boundaries, 11"x17"
5.532.00	United States, outlines only, 11"x17"
5.533.00	United States, waterways marked, 11"x17"
5.534.00	United States, political boundaries, 11"x17"
5.537.00	compass directions
5.538.00	parts of the flag cards
5.539.00	flag paper
5.540.00	parts of the flag descriptions
5.541.00	naming days and months
5.542.00	earth labels
5.573.00	continental United States and Alaska
5.574.00	country capital labels
5.575.00	names of the months
5.577.00	physical features of the world
5.578.00	set of eight cardboard maps (world, Africa, Asia, Australia, Europe, North America, South America, United States) (2)
5.625.00	weather symbols matching cards

II. THE BEGINNING

Note: Materials for a particular exercise are not set up on their own individual tray in the elementary class. Rather, the children have to think through and get all the materials they need from the supply that is kept on a shelf. Chemicals are locked in a closet and are taken out only under the direction of the teacher. The teacher remains with the children through the time it takes to do experiments that require the use of chemicals that could cause harm if misused.

A. Great Lesson

ammonium dichromate
bowls, glass, with transparent sides (2)
charts, impressionistic (handmade)
dishes, small metal (3)
glasses or beakers, identical (3)
glass (for water)
hot plate or sterno stove or alcohol lamp with denatured alcohol
ice
iron, small piece
liquid, heavy (such as molasses or honey)
jar, clear glass, with cover
lead shot
matches, fireplace
oil
paper, torn into small pieces, in small container
paraffin
perfume with bad smell
solder
test tubes

** These exercises are included for the chilren who did not master them in their preschool class.*

- tray
- volcano
- water
- wax
- wood, piece which may be broken

B. Composition of the Earth

- chart, impressionistic (handmade)
- magnet, large
- paper, black
- weight, iron
- yardstick

III. THE NATURE OF THE ELEMENTS

A. Properties of the Three States of Matter

- basin
- bowl, glass, with cold water
- containers, clear, of various sizes and shapes
- food coloring
- glass, empty
- hot plate or sterno stove
- lead shot, in transparent glass container
- lead solder
- paper, thin sheet
- perfume, bad smelling, in spray bottle
- pitcher, glass
- pitcher, plastic, with holes covered by removable tape
- objects, solid (some heavy - wood, clay, tile, rock, brick, etc.)
- teaspoon
- trays

B. Further States of Matter

- bricks or blocks of wood, (2)
- Bunsen burner or sterno stove
- clay in rectangular shape
- eraser in rectangular shape
- honey
- matches
- oil
- sheet of clear glass (edges taped) or Plexiglass (6.5" x 12")
- spheres:
  - clay
  - rubber
  - Styrofoam
  - wood
- test tubes
- test tube rack
- tongs
- trays
- water
- weights, set of
- wood, balsa, same lengths but 3 different thicknesses
- wood, rectangular piece

C. Different Ways of Combining

- absorbent pad
- ammonia
- beaker
- chalk powder
- corks
- cupric sulfate (powdered)
- custard cup, Pyrex
- dishes, Pyrex, (4)
- glasses, (2)
- handkerchief, white
- hydrochloric acid
- iron filings
- lead nitrate
- labels, prepared
- marble chip
- magnet, strong
- matches
- metal plate
- pitcher containing water
- potassium dichromate
- rods, glass stirring, (2)
- salt
- sand, clean
- saucer, ceramic
- spoon
- sulphur (or flour)
- sugar
- sulfuric acid
- test tubes, Pyrex
- test tube rack
- tongs
- trays
- tray with a heat protected top

D. Attraction of the Earth and Gravity

- bowl, large glass
- bricks, (4)
- cork
- honey
- magnet, strong
- marbles
- objects, various:
  - some magnetic (some heavy)
  - some non-magnetic
- oil
- paper clips
- ping pong balls
- sand, clean
- test tubes, Pyrex (3)
- trays
- water
- wood, thin board

E. Composition of the Earth

- chart, impressionistic (handmade)
- honey or molasses
- iron weight
- oil
- magnet, large
- paper, black
- test tubes, Pyrex
- water
- yardstick

IV. SUN AND EARTH

A. Rotation of the Earth and Its Effects

0.230.00 globe, sandpaper
- charts, impressionistic (handmade)
- clock symbols, 24
- lamp with bulb, no shade
- paper, narrow strip
- twelve black strips
- twelve white strips
- weight, tied to a string

B. Perpendicular and Oblique Rays

- chalk, white
- charts, impressionistic (handmade)
- clay, flat rectangle
- sphere
- flashlight
- magnifying glass
- paper, black
- white
- toothpicks

C. Solstices and Seasons

0.230.00 globe, sandpaper
- charts, impressionistic (handmade)
- clay, sphere
- small piece
- globe, large
- knitting needle
- labels, handmade
- lamp with bulb, no shade
- paper, strips:
  - blue
  - brown
  - green
  - pink
  - red
  - white
- pin, straight, with colored head
- suns, handmade

D. Protection of the Atmosphere and the Rains

- bowl, large glass
- Bunsen burner, hot plate or sterno stove
- charts, impressionistic (handmade)
- hair dryer
- pad, heat proof
- pitcher, small
- sauce pan, small
- saucer
- spoon, metal
- tray
- water

V. THE WORK OF AIR

A. Winds

- candle, small
- charts, impressionistic (handmade)
- clay
- flask, glass, with rubber or cork stopper with hole
- funnel, glass
- incense, stick
- matches
- paper circles
- paper spirals
- pencils, (2)
- pin, stick
- pitcher, small
- pole in metal base
- tray
- tube, cardboard, with rectangular piece cut from one end
- water

B. Effect of Heat on Land

- bowls, Pyrex (2)
- charts, impressionistic (handmade)
- clock, watch or oven timer
- hot pads
- mat, heat proof
- metal covering plate for stove
- refrigerator
- sand
- sterno stove
- thermometers (2)
- tongs
- tray
- water

C. Seasonal Changes

- arrows, red and blue (handmade)
- charts, impressionistic (handmade)
- sun (handmade)

D. Oceanic Current

- basin, large
- bowl, transparent glass
- brick or rock
- charts, impressionistic (handmade)
- flask, Pyrex
- ice cubes
- metal covering plate for stove
- pad, heat proof
- pitcher, small
- sawdust
- sterno stove
- tubing
- water, warm
- water, cold, colored
- specimens, wind-eroded rocks

E. Wind as Sculptor

- chart, impressionistic (handmade)
- pictures of rock formations

VI. WORK OF WATER

A. The River

- aluminum foil
- bowl or pan, clear glass
- chalk powder
- charts, impressionistic (handmade)

clay
hose or plastic tubing with funnel on one end
map, North America, with transparent overlays (handmade)
newspaper
pebbles
river model (handmade)
rocks, small
sand, regular
several different colors and sizes
water

B. Rain
boards on which to build models (3)
chart, impressionistic (handmade)
clay
moss
rock
sand
water
watering can

C. Waves
basin or tub, large
clay
sand
plywood
water
wood, small board

D. Ice
bottle, thin glass
charts, impressionistic (handmade)
freezer
tray
water

E. Water Cycle
charts, impressionistic (handmade)

F. Spread of Vegetation
chart, impressionistic (handmade)
plants, different kinds, live specimens and pictures

G. People in Different Zones
0.195.01 clear plastic envelopes (6)
0.195.B0 container with vertical divisions (3)
charts, impressionistic (handmade)
nomenclature material, peoples of the arctic, tropics, desert

H. Composition of the Earth
0.188.B0 five yellow prisms
0.188.C0 grey rectangular prism
0.188.D0 two green rhombic prisms, ends covered with striped paper of different colors
0.188.E0 two blue hexagonal prisms, ends covered with striped paper of different colors
bag, plastic ziplock
bowl, glass
charts, impressionistic (handmade)
coffee grounds
felt of different colors
flask with cork with hole
funnel, glass
hot plate
pictures of mountains of different types
rock, heavy
teapot
water
wood, small flat piece

VII. ECONOMIC GEOGRAPHY

A. Production and Consumption
5.505.00 world 17" x 22"
5.508.00 world, 11" x 17"
5.514.00 Africa 11" x 17"
5.517.00 Asia 11" x 17"
5.520.00 Australia 11" x 17"
5.523.00 Europe 11" x 17"
5.526.00 North America 11" x 17"
5.529.00 South America 11" x 17"
5.532.00 United States 11" x 17"
state in which school is located
books, source (almanacs, encyclopaedias, atlases, agricultural charts, natural resource charts, etc.)
glue
paper:
  plain
  lined
  quadrille
pencil:
  regular
  colored
products, natural resources and raw materials
stamps
scissors
stamp pad, inked

B. Imports and Exports
The following maps are used to make examples:
5.505.00 world 17" x 22"
5.508.00 world, 11" x 17"
charts, impressionistic (handmade)

C. Interdependencies
0.105.B0 command box, natural finish (3)
card material, 6 sets (handmade)
paper, large sheets, white
pencils, colored
pot, small

VIII. NOMENCLATURE

A Mountains

0.195.01	clear plastic envelopes (2)
0.195.B0	container with vertical divisions
5.505.00	world 17" x 22"
5.508.00	world 11" x 17"
5.514.00	Africa 11" x 17"
5.517.00	Asia 11" x 17"
5.520.00	Australia 11" x 17"
5.523.00	Europe 11" x 17"
5.526.00	North America 11" x 17"
5.529.00	South America 11" x 17"
5.532.00	United States 11" x 17"
	clay
	glue
	labels (handmade)
	maps, outline:
	nomenclature materials (handmade)
	paper, heavy, for making models of mountains
	paper, strips
	pencils, colored
	plywood
	scissors
	toothpicks
	water
	watering can

B. Rivers

0.195.01	clear plastic envelopes (2)
0.195.B0	container with vertical divisions
	nomenclature materials (handmade)
	other materials from "Work of Water" (see above)

C. Coastlines

0.195.01	clear plastic envelopes (2)
0.195.B0	container with vertical divisions
	nomenclature materials (handmade)

D. Inland Land Formations

0.195.01	clear plastic envelopes (2)
0.195.B0	container with vertical divisions
	nomenclature materials (handmade)

IX. EXPERIMENTS

cards, experiments (handmade)
file boxes for 5" x 8" experiment cards

GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY

SIMPLE INVENTORY FROM NIENHUIS

0.105.B0	command box, natural finish (5)
0.173.01	cabinet of maps of the world parts with flags, control maps and self-sticking names
0.173.19	set of name cards, self-sticking-for control maps
0.188.B0	five yellow prisms
0.188.C0	grey rectangular prism
0.188.D0	two green rhombic prisms
0.188.E0	two blue hexagonal prisms
0.195.01	clear plastic envelopes (25)
0.195.B0	container with vertical divisions (10)
0.230.00	sandpaper globe
0.231.00	painted globe
0.232.00	stand with flags of Asia
0.233.00	stand with flags of Europe
0.233.A0	stand with flags of North and South America
1.626.00	map cabinet for 11"x17" paper maps (4)
7.701.00	scissors with rounded point, 10.4 cm. (6) (see math)
7.702.00	scissors with sharp point, 10.4 cm. (6) (see math)
7.708.00	six scissor storage block (2) (see math)

GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY

CURRICULUM SUPPORT MATERIALS FROM NIENHUIS

5.500.00	basic land and water forms
5.501.00	land and water descriptions
5.502.00	command cards, set 1
5.503.00	land and water form labels
5.504.00	command cards, set 2
5.505.00	world maps, outlines only 17"x22"
5.506.00	world maps, political boundaries 17"x22"
5.507.00	world maps, political boundaries & waterways 17"x22"
5.508.00	world maps, outlines only, 11"x17"
5.509.00	world maps, political boundaries 11"x17"
5.510.00	world maps, political boundaries & waterways 11"x17"
5.511.00	hemisphere maps and labels set
5.512.00	world unlabeled control map
5.512.10	world labeled control map
5.514.00	Africa, outlines only 11"x17"
5.515.00	Africa, waterways marked 11"x17"
5.516.00	Africa, political boundaries 11"x17"
5.517.00	Asia, outlines only 11"x17"
5.518.00	Asia, waterways marked 11"x17"
5.519.00	Asia, political boundaries 11"x17"
5.520.00	Australia, outlines only 11"x17"
5.521.00	Australia, waterways marked 11"x17"
5.522.00	Australia, political boundaries 11"x17"
5.523.00	Europe, outlines only 11"x17"
5.524.00	Europe, waterways marked 11"x17"
5.525.00	Europe, political boundaries 11"x17"
5.526.00	North America, outlines only 11"x17"
5.527.00	North America, waterways marked 11"x17"
5.528.00	North America, political boundaries 11"x17"
5.529.00	South America, outlines only 11"x17"
5.530.00	South America, waterways marked 11"x17"
5.531.00	South America, political boundaries 11"x17"
5.532.00	United States, outlines only 11"x17"
5.533.00	United States, waterways marked 11"x17"
5.534.00	United States, political boundaries 11"x17"
5.537.00	compass directions
5.538.00	parts of the flag cards
5.539.00	flag paper
5.540.00	parts of the flag descriptions
5.541.00	naming days and months
5.542.00	earth labels
5.573.00	continental United States and Alaska
5.574.00	country capital labels
5.575.00	names of the months
5.577.00	physical features of the world
5.578.00	set of eight cardboard maps (world, Africa, Asia, Australia, Europe, North America, South America, United States) (2)
5.625.00	weather symbol matching cards

GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY

OTHER MATERIALS TO BUY OR FIND

- absorbent pad
- alcohol, denatured
- alcohol, lamp
- aluminum foil
- ammonia
- ammonium dichromate
- antidotes in fixed, unlocked location
- bags, plastic zip lock, 10-1/2"x11-1/2"
- baking soda (for experiments and for emergencies)
- balls:
  - ping-pong
  - rubber
  - Styrofoam
- basins of various sizes
- beakers of various sizes (at least 3 of same size)
- books:
  - almanacs
  - encyclopaedias
  - atlases
  - etc.
- bottle brushes of various sizes*
- bottle, thin glass
- bowls:
  - foil (3)
  - clear plastic
  - metal
  - glass, large
  - glass with transparent sides
  - Pyrex (2)
- boxes:*
  - metal, with hinged cover
  - plastic, clear
  - plastic, clear, circular
- bread tin, clear glass Pyrex, 4-1/2"x8-1/2"*
- bricks (5)
- bucket*
- Bunsen burner and propane
- cabinets:
  - for 11"x17" paper maps
  - small 10 drawer, for small objects (3)*
- candles
- chalk, white
- chalk powder
- charts:
  - agricultural
  - natural resources
  - etc.
- chemicals, as necessary for experiments
- clay, in covered bucket
- clock, watch or oven timer
- clothespins, 3 wooden with one long arm (for holding test tubes)*
- coasters*
- coffee grounds
- containers:
  - plastic, freezer
  - glass, transparent, various sizes and shapes
- cord, extension*
- corks:
  - various sizes
  - various sizes with center hole for tubing
- cotton balls
- cup and saucer*
- cupric sulfate, powdered
- cups, measuring, 1/4, 1/3, 1/2, 1 and 2 cup capacity*
- cups, Pyrex custard, 2 sizes (6)
- detergent, liquid*
- dishes:
  - glass, Pyrex (4)
  - small metal (3)
- dolls in national costume
- dye
- eraser, rectangular shape
- eye droppers*
- felt:
  - various colors, 18"x7"
  - various colors, strips
- file boxes for 5"x8" experiment cards
- first aid box - in fixed, unlocked location*
- flashlight
- flasks of various sizes
- flour
- food coloring
- forceps*
- freezer
- funnels of various sizes:
  - clear glass
  - metal
- glass, piece of clear, 6-1/2"x12" (tape around the edges)
- glasses:
  - small, clear glass (6)
  - regular size (2)
- globe of world, large
- gloves, disposable, rubber
- glue
- glue stick
- hair dryer
- handkerchief
- honey
- hot pads
- hot plate
- hydrochloric acid
- incense, sticks
- ink pads
- iron:
  - bar, 12" long, 3/8" diameter
  - shot
  - filings
  - small piece
  - weight

jars of various sizes and shapes
kettle, 3 cup size*
knitting needle, large
lamp with bulb, no shade
lead nitrate
lead, shot
lid, metal paint can*
magic markers, water base (6 colors)*
magnets:
    horseshoe
    cow
magnifying glasses
maps, state in which school is located
marble chips
marbles
mat, heat proof
matches:
    fireplace
    wooden kitchen
metal covering plate for stove
metal plate
molasses
moss
nails of assorted sizes
newspaper
nuts
objects:
    brick
    clay
    iron
    non-iron
    plastic
    rock
    tile
    wood
oil, cooking
pad, heat proof
pans:*
    clear glass Pyrex, 6"x10"
    dish
paper clips
paper:
    black
    graph (quadrille)
    heavy, for making mountain ranges
    lined
    plain, thin
    small, torn pieces
    white sheets, 8.5" x 11"
    white sheets, large
paraffin
pebbles
pencils:
    regular, at least 2
    colored
perfume, bad smelling
periodic table of the elements*
pins with colored heads
pitchers:
    2 quart, plastic, no holes
    2 quart, plastic, holes with tape
    glass
    small
plants, different kinds:
    live specimens
    pictures
plasticine:
    small supply
    in ball shape
pole in metal base
pot, small
potassium dichromate
prism
products, natural resources and raw materials stamps
refrigerator
rock, heavy
rocks, small
rods, glass, stirring (6)
salt
sand: (for experiments and for emergencies)
    in pail with trowel and scoop
    in different colors
    clear, high quality
saucepan, small
saucers:
    ceramic
    plastic (4)
sawdust
scale, balance, with weights*
screen protector for top of burner*
sheets, heat resistant for stove top protection, 17"x19"*
silverware tray (4 compartments)*
slides for microscope*
slide covers*
solder, lead
specimens, rocks
sponges*
spoons:
    soup (2)
    with slender bowl
    measuring
    metal
    teaspoon
sprinkling can
stamp pad, inked
stand, metal with perpendicular bar, with metal ring attachments*
sterno
sterno stove
stoppers*
stove, small collapsible camp*
strainer, small*
sugar
sulfuric acid
sulphur
table knife*

- tape, mystic*
- teapot
- terra cotta, broken pieces*
- test tubes, Pyrex (9)
- test tube holders with space for 6 test tubes (3)
- thermometers
- thermos, wide mouth, 3-1/2" high, 4" diameter*
- thread*
- tongs
- toothpicks
- trays, metal:
  - 12"x17" (2)
  - 10-1/2"x15" (4) cookie sheets
  - 11"x14" (4)
  - 9"x12"
  - 5"x7" (3)
  - with heat protected top
- tubes:
  - clear plastic
  - shower head at one end, cone shape at other end
  - cardboard, 12" tall, 2-1/2" diameter with rectangular piece cut from one end
- twine, rough*
- water: (for experiments and for emergencies)
  - cold
  - hot
  - room temperature
- watering can
- weights:
  - set for balance scale
  - tied to a string
  - iron
- wood:
  - balsa, all pieces same length and 3 inches wide, but 3 different thicknesses
  - blocks, size of brick (2)
  - boards on which to build models, 18" x 18" (3)
  - broken pieces
  - piece to break
  - plywood 12" x 18"
  - rectangular piece
  - small board
  - small flat piece
  - sphere
  - strips, small
  - strips, 1/4" sq
  - thin board
- yardstick

** Materials in the general supply for geography which are not indicated in the activities and materials list.*

GEOGRAPHY AND SCIENCE FOR THE ELEMENTARY
MATERIALS TO MAKE OR FIND

arrows:
    blue
    red
bowl, red, drawing
card material, 6 sets
charts, impressionistic 22"x28" (approximately 100)
circles
clock symbols (24)
economic geography folders
ice
ice cubes
labels:
    cities of United States
    on 3"x5" cards for results of experiments
    for charts
    for mountains
    etc.
maps:
    North America with overlays
    state in which school is located, products of
    study of a nation
    United States, products of
mountains:
    clay, with labels
    paper, cut out, of the United States
    pictures, find and mount
nomenclature materials
paper items:
    black strips
    circles
    spirals
    strips
    strips for geography chart:
        blue
        brown
        green
        pink
        red
        white
    white strips
    yellow, 3"x2-1/2"
pictures, rock formations
river model
smokestack (cardboard tube)
spirals, paper
suns
volcano

BIOLOGY FOR THE PRESCHOOL
ACTIVITIES AND MATERIALS OVERVIEW

I. Botany

A. Familiarization - caring for live plants in the environment

5.662.00 writing paper blue lined 4.25" x 5.5"
5.665.00 writing paper blue lined 8.5" x 11"
5.667.00 writing paper green lined 4" x 7"
5.669.00 writing paper green lined 8.5" x 11"

Note: *all of the above paper may be used for drawing successive stages of plant growth*

fertilizer
garden soil
light source
mister
peat
pebbles
plants, live
pottery
saucers or pans on which to set plant pots
stand(s) for plants
vermiculite
water
watering can

B. Needs of Plants

cotton, sterile
garden soil
labels (handmade)
trays
saucers with cotton
seeds
water
watering can

C. Plant Stories

folders with pockets (different folder for each plant)
labels (handmade)
pictures (find and mount)
text for pictures (handmade)
Who am I? sets (handmade)

D. The Leaf

0.041.A0, 0.041.A1 leaf cabinet and contents (see Sensorial)
0.043.00 leaf cards (see Sensorial)
0.044.00 cabinet with three compartments (see Sensorial)
5.627.00 botany matching cards
5.628.00 botany control chart
5.629.00 parts of a leaf
5.631.00 botany cabinet labels
leaf specimens
magnifying glass
plants, live
tray
water

E. The Flower

5.630.00 parts of a flower

F. Nomenclature materials

0.195.00 botany cards (2)
0.195.A1 printed names for 0.195.00 (2)
0.195.B0 box for cards (4)
0.196.00 botany cards set 2 (2)
0.196.A1 printed names for 0.196.00 (2)
0.196.B0 boxes: (2)
0.197.00 botany cards set 3 (2)
0.197.A1 printed names for 0.197.00 (2)
0.197.B0 boxes: (2)
definitions/descriptions (handmade)

G. Botany books for additional information

II. Zoology

A. Familiarization - caring for live animals in the environment

5.617.00 heading cards for sorting exercises
5.618.00 parts of the human body, external
5.619.00 parts of the human body, external, paper
6.620.00 animals and their homes
6.621.00 animals and their voices
6.622.00 animals and their young
6.623.00 animal names
6.624.00 animals and their groups
aquariums and all necessary equipment, as appropriate
bedding, as appropriate
cages, as appropriate
food, as appropriate
newspaper
specimens

B. Animal Stories

folders with pockets (different folder for each animal)
labels (handmade)
pictures (find and mount)
text for pictures (handmade)
Who am I? sets (handmade)

C. Nomenclature

0.195.B0 - box for cards, 5 (for external parts)
external parts of vertebrates (handmade)
heading cards (handmade)

D. Zoology books for additional information

III. Classification Exercises

A. Living - non-living
real objects
pictures

B. Plant - animal
real plants and animals
pictures

C. Etc., as far as interest allows

BIOLOGY FOR THE PRESCHOOL

SIMPLE INVENTORY - MATERIALS FROM NIENHUIS

0.041.A0	leaf cabinet
0.041.A1	contents of leaf cabinet
0.043.00	leaf cards
0.044.00	cabinet with 3 compartments
0.195.00	botany cards set 1 (2)
0.195.A1	printed names for 0.195.00 (2)
0.195.B0	boxes (9)
0.196.00	botany cards set 2 (2)
0.196.A1	printed names for 0.196.00 (2)
0.196.B0	boxes: (2)
0.197.00	botany cards set 3 (2)
0.197.A1	printed names for 0.197.00 (2)
0.197.B0	boxes: (2)

CURRICULUM SUPPORT MATERIALS

5.617.00	heading cards for sorting exercises
5.618.00	parts of the human body, external
5.619.00	parts of the human body, external, paper
5.620.00	animals and their homes
5.621.00	animals and their voices
5.622.00	animals and their young
5.623.00	animal names
5.624.00	animals and their groups
5.627.00	botany cabinet matching cards
5.628.00	botany cabinet control chart
5.629.00	parts of a leaf
5.630.00	parts of a flower
5.631.00	botany cabinet labels
5.662.00	writing paper blue lined 4.25" x 5.5"
5.665.00	writing paper blue lined 8.5" x 11"
5.667.00	writing paper green lined 4" x 7"
5.669.00	writing paper green lined 8.5" x 11"

BIOLOGY FOR THE PRESCHOOL
OTHER MATERIALS TO BUY OR OBTAIN

animals, live
aquarium(s)
    aquarium nets, heater, lights, gravel, etc.
bedding for animals, as appropriate
books, for additional information
bowls, various sizes, various materials*
buckets/pails*
cage(s) for animals
cotton, sterile
fertilizer
first aid kit*
flower pots, various sizes and shapes*
food for various pets and plants in the classroom
garden soil
herbarium*
leaf and flower press*
leaf specimens
light source for plants
magnifying glass
mini set of gardening tools*
mister*
moss, sphagnum*
newspaper
paper: black*
    in various colors*
    plain white*
paring knife*
peat
pebbles
pencils*
plants, live
pottery
sand*
saucers or pans on which to set plants
scissors*
seeds for planting (corn, beans, etc.)
specimens, as interest dictates
stands for plants
terrarium*
toothpicks*
trays - various sizes, shapes and materials
vermiculite
water
watering can

**General supplies, usually not specified in the curriculum outline.*

BIOLOGY FOR THE PRESCHOOL
MATERIALS TO MAKE

- folders with information and pictures
    - animals
    - plants
- heading cards
- labels
- nomenclature materials:
    - botany
    - zoology
- picture cards and labels:
    - fish
    - amphibians
    - reptiles
    - birds
    - mammals
    - plants
    - living - non-living
    - plant - animal
    - etc.
- text for pictures
- Who am I? sets
    - animals
    - plants

BIOLOGY FOR THE ELEMENTARY
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.041.A0	leaf cabinet (see sensorial)
0.041.A1	contents of leaf cabinet (see sensorial)
0.195.00	botany cards set 1 (2) (see sensorial)
0.195.A1	printed names (2) (see sensorial)
0.195.B0	boxes (13)
0.196.00	botany cards set 2 (2)
0.196.A1	printed names (2)
0.196.B0	boxes (2)
0.197.00	botany cards set 3 (2)
0.197.A1	printed names (2)
0.197.B0	boxes (2)

CURRICULUM SUPPORT MATERIALS

5.617.00	heading cards for sorting exercises
5.618.00	parts of the human body, external
5.619.00	parts of the human body, external, paper
5.620.00	animals and their homes (see Language)
5.621.00	animals and their voices (see Language)
5.622.00	animals and their young (see Language)
5.623.00	animal names (see Language)
5.624.00	animals and their groups (see Language)
5.627.00	botany matching cards
5.628.00	botany control chart
5.629.00	parts of a leaf
5.630.00	parts of a flower
5.631.00	botany cabinet labels

BIOLOGY FOR THE ELEMENTARY
OTHER MATERIALS TO BUY OR FIND

aquarium(s)
aquarium nets, heater, lights, gravel, etc.
bags, clear plastic, zip lock
basket, wire
bedding for animals, as appropriate
blotter paper
books, botany and zoology - for further research
bowls, various sizes, various materials
box, file, for botany experiment cards
buckets/pails
cabinet, small pull drawer cabinet for slides, droppers, labels, pins, etc.
cage(s) for animals
calcium nitrate
card stock in various colors*
celery
coffee cans with lids*
cork board*
cotton, sterile
dissecting kit*
ferric chloride
fertilizer
first aid kit
folders, pocket
flower pots, various sizes and shapes
food for various pets and plants in the classroom
food coloring
funnel, transparent glass
garden soil
herbarium*
jars and lids, supply of various sizes
  6 identical
  broad mouthed
  small
  tall
leaf and flower press*
light source for plants
magnesium sulfate
magnifying glass
microscope
mini set of gardening tools*
mister
moss, sphagnum
newspaper
nutcracker
pan, clear glass
paper:
  black
  in various colors
  plain white
paring knife
peat
pebbles
pencil
pictures, different types of roots
pins, push
plant stand*
plants:
  aquatic
  variety of live plants
potassium phosphate
pottery, broken bits*
razor blades, single edged
rubber bands
sand
saucers or pans on which to set plants
saw dust
scalpel
scissors
seedlings
seeds for planting (corn, bean, etc.)
stands for plants
stone
string
terrarium*
test tube holder
test tubes, glass
tissue
toothpicks
trays - various sizes, shapes and materials
tweezers
vermiculite
water, distilled
watering can

**General supplies, usually not specified in the curriculum outline.*

BIOLOGY FOR THE ELEMENTARY - SPECIMENS

algae
bark
bee
branches and/or stems showing:
  fungi, bracket or shelf
  twining stem
  hooked climber stem
  tendril
butterfly
cones, pine
egg, bird
ferns
flowers, variety of
fruits, variety of
insects
leaves, variety of
lichen
moss
mushrooms
nuts, different kinds
perishable items, as needed (fruits, vegetables, flowers, etc.)
plants, live, variety
roots, variety
seeds, variety
shells and other things from the sea
specimens, plants and animals, preserved
tree trunk, cross section

BIOLOGY FOR THE ELEMENTARY
MATERIALS TO MAKE

- animal folders (e.g., herring gull, sea lion, chipmunk, bald eagle, Gila monster)
- animal question cards
- box with lid and 2 windows
- cardboard tubes for rigid vertebral column and flexible vertebral column
- cards:
  - botany experiments
  - care of plants in class
- charts, 22"x28" (approximately 20)
- heading cards
- kingdom animalia materials
- kingdom vegetalia materials
- labels
- nomenclature materials:

Note: Complete nomenclature materials are available for students at AMI elementary courses - or - pictures and labels are available from Nienhuis (0.195.00, 0.196.00, 0.197.00), definitions/descriptions need to be handmade.

- zoology:
  - body functions
  - external parts of vertebrates
- paper strips
- picture cards and labels:
  - fish
  - amphibians
  - reptiles
  - birds
  - mammals
  - etc.
- question cards
- text for pictures
- tree of life materials
- volcano
- Who am I? sets

CURRICULUM RESOURCES

SPECIALTY SUBJECTS

Montessori elementary teachers are generalists whose task is to "sow the seeds of culture." This means that they are to expose children to as much information as possible about the cultures, inventions, and knowledge developed and acquired by human beings during the time human beings have been on earth. This includes math, geometry, language, history, geography, botany, zoology, geology and physics, as well as music and art. Ideally this is all done by the classroom teacher both within the confines of the classroom environment and in the "Going Out" program of the elementary. Children who wish to pursue technical skills in such things as music should enroll in special music classes. Ideally these special classes should be outside school hours.

Reality clashes with this ideal in two respects at Greenfield Montessori School, which is one of the Milwaukee Public Montessori School Magnets. First, the Milwaukee Public School System insists that Montessori specialty schools have art and physical education teachers. Therefore, at Greenfield School there is a half-time art teacher and a half-time physical education teacher. Over a two-week time period, they each spend five full days at Greenfield School. The principal arranged for those two teachers to have three of those days in common.

Second, many families are unable to afford private lessons for their children or have no transportation available for the free group lessons for a variety of instruments offered on Saturdays by the Milwaukee Public Schools. For this reason, piano lessons and Suzuki violin lessons are offered during school hours. This results in interruptions of the children's work cycle. (See "Prepared Environment" for a discussion of the Work Cycle).

In order to protect the work cycle as much as possible, gym and art periods were made longer, and, whenever possible, they were scheduled back-to-back. The result is that elementary children still receive the required amount of gym and art time while having fewer interruptions of their work time. With this schedule, every elementary class has from 69 to 74 percent of their school days free from interruptions from art and gym.

The following list details the various requests and conditions taken into account when making the schedule for art and gym at Greenfield School.

1. The time for physical education is limited by the lunch period because the space used for gym has three functions — gym, auditorium and lunch room. Gym ends at 11:05 so that lunch tables may be set up. Five year olds and upper elementary students eat lunch at 11:30. Lower elementary students eat at 12:00. Lunch tables are folded up and the floor cleaned from 12:30 to 1:00. Gym resumes at 1:00.
2. The elementary teachers voted to have longer gym and art periods and to have those periods back-to-back whenever possible so there would be fewer (but longer) interruptions overall.
3. The preschool teachers wanted to have as much teaching time as possible with the children in the afternoons when only the five year olds were present; therefore, they requested that gym and art for their five year olds be in the mornings. (Three and four year olds, who are present during the mornings only, do not go to the gym or art teachers.) The preschool teachers also requested that their gym and art periods be at consistent times. This regularity of schedule aids the five year olds in their development of a sense of time and its passage on a weekly basis. Both of these requests were possible to fulfill. The five year olds have gym every Wednesday morning and art every Friday morning.
4. The art teacher requested that elementary art periods be relatively long so that completion of an art project could occur during one period. This was possible in the mornings but not always in the afternoons.

5. Both the gym and art teachers requested that all classes on a given morning or afternoon be for the same age level. It was possible to fulfill this request for all the mornings but not for all the afternoons.
6. The art teacher requested that there be art club time for special projects. Time was set aside for this in the overall time plan, but was not written into the daily schedules so the greatest possible flexibility could be maintained.

The time schedule shows a school day from 8:00 a.m. to 2:30 p.m. Children enter school as they get off the busses beginning at 7:55 a.m. School officially begins at 8:10 a.m. and ends at 2:40 p.m. Busses begin to load at 2:30 p.m. (see Illustration 1).

The gym schedule shows four 40 minute gym periods during the morning, 25 minutes for lunch set up, one hour for lunch, 30 minutes for clean up, and two 40 minute gym periods in the afternoon.

The art schedule shows two 85 minute art periods in the mornings, one 40 minute art period in the afternoons, and one 45 or one 75 minute art period in the afternoon, depending on whether the art period is for the upper elementary whose lunch and recess is over at 12:15 or for the lower elementary whose lunch and recess is over at 12:45. Art club time for the lower elementary age is from 11:15 to 11:55 and for the upper elementary from 12:05 to 12:45. The latter overlaps 10 minutes with upper elementary recess.

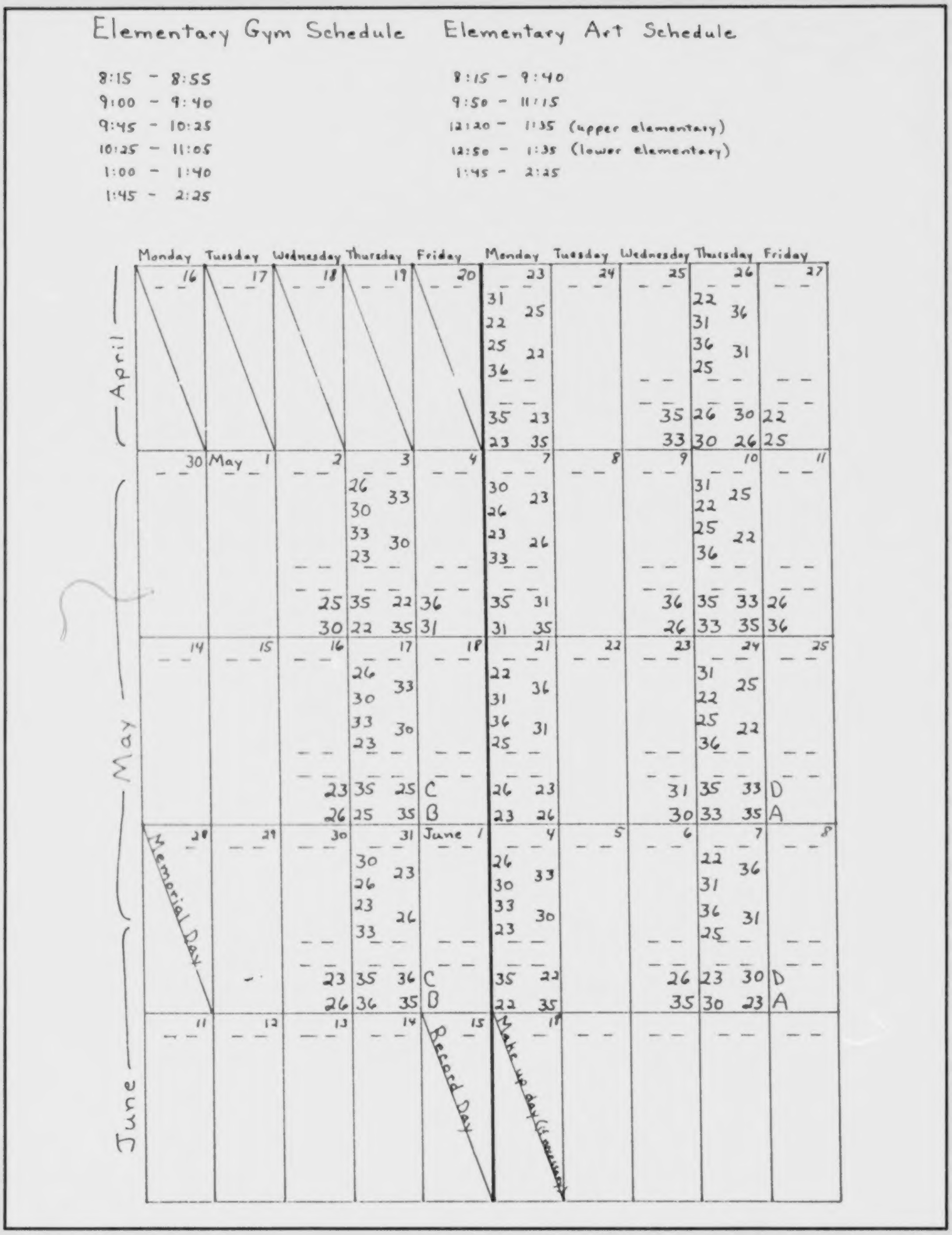
The elementary gym and art schedule for February to the end of school in June is shown in Illustration 2. Upper elementary classes are designated by letters (A, B, C, D). Lower elementary classes have numbers (1, 2, 3, 4, 5). Since gym and art for the five preschool classes occur on a regular schedule, only the blocks of time they occupy have been indicated on the schedule. Each class receives a copy of this schedule and each class highlights its room number on the schedule. Many elementary rooms have one of the class "jobs" to keep track of the art and gym schedule. The child whose job it is announces at the end of the school day whether or not there is art or gym the next day and then announces it again the next morning. Under special conditions, the classroom teachers can trade art or gym periods if necessary.

With a schedule like this it is not possible to give everyone exactly the same amount of time. All elementary classes have 20 or 21 gym periods. The total number of minutes for art per class varies from 955 to 995, a difference of 40 minutes.

Obviously, this schedule is the result of cooperation and compromise on the part of all staff affected by this schedule. This was possible because all have a common goal of achieving the best possible conditions for the children at Greenfield School, and all accept the fact that there will be some variation in the amount of time scheduled for specialty subjects.

Jean K. Miller

ILLUSTRATION 1



Elementary Gym Schedule

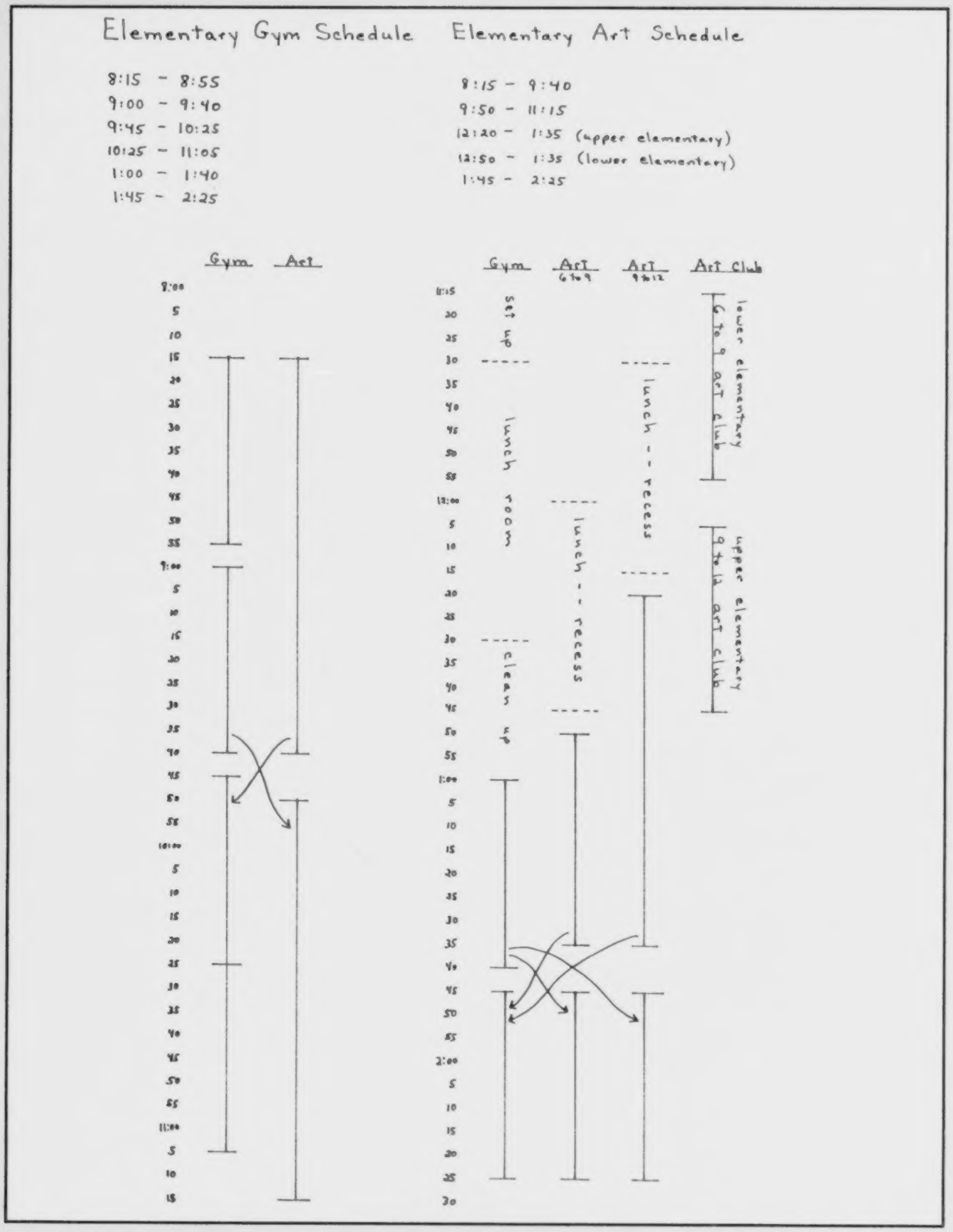
8:15 - 8:55
9:00 - 9:40
9:45 - 10:25
10:25 - 11:05
1:00 - 1:40
1:45 - 2:25

Elementary Art Schedule

8:15 - 9:40
9:50 - 11:15
12:20 - 1:35 (upper elementary)
12:50 - 1:35 (lower elementary)
1:45 - 2:25

	Monday	Tuesday	Wednesday	Thursday	Friday	Monday	Tuesday	Wednesday	Thursday	Friday
April	16	17	18	19	20	23 31 25 22 25 22 36 35 23 23 35	24	25 35 33	26 22 36 31 36 31 25 26 30 30 26	27 22 25
	30	May 1	2 25 30	3 26 33 30 33 30 23 35 22 22 35	4 36 31	7 30 23 26 23 26 33 35 31 31 35	8	9 36 26	10 31 25 22 25 22 36 35 33 33 35	11 26 36
May	14	15	16 23 26	17 26 33 30 33 30 23 35 25 25 35	18 C B	21 22 36 31 36 31 25 26 23 23 26	22	23 31 30	24 31 25 22 25 22 36 35 33 33 35	25 D A
	28 Memorial Day	29	30 23 26	31 30 23 26 23 26 33 35 36 36 35	June 1 C B	4 26 33 30 33 30 23 35 22 22 35	5	6 26 35	7 22 36 31 36 31 25 23 30 30 23	8 D A
June	11	12	13	14	15 Record Day	18 Make up day (if necessary)				

ILLUSTRATION 2



Elementary Gym Schedule

8:15 - 8:55
9:00 - 9:40
9:45 - 10:25
10:25 - 11:05
1:00 - 1:40
1:45 - 2:25

Elementary Art Schedule

8:15 - 9:40
9:50 - 11:15
12:20 - 1:35 (upper elementary)
12:50 - 1:35 (lower elementary)
1:45 - 2:25

Gym
Art
8:00
11:15
Gym
Art 6 to 9
Art 9 to 12
Art Club
12:00
1:00
2:00
set up
lunch room
clean up
lunch -- recess
lunch -- recess
lower elementary 6 to 9 art club
upper elementary 9 to 12 art club

CURRICULUM RESOURCES

MUSIC

INTRODUCTION

In both the preschool and the elementary, Montessori music consists of seven related elements which include:

Singing
Listening (audition)
Music theory and ear training
Movement (eurythmics)
Composition
Production of music with instruments
History and literature

The first area, singing, provides children with a repertoire of melodies which can be used in the production and analysis of music. Singing also provides opportunities for understanding scales, expressing feelings, and for understanding cultures in other parts of the world and eras in music history.

The audition or listening element relates to musical expression. The feeling expressed by a piece of music, such as a folk song, religious piece, or composition of a great composer, can be absorbed and recognized by children. This in turn leads to quiet listening and contemplation, to expression of the feeling through movement, to the expression of feeling in writing or in art, to the examining of qualities and characteristics of different musical instruments, or to the understanding of an era or a group of people through the music which they produced. This may lead to the study of style and musical form. The opportunities for expansion of the idea are limitless.

When language materials are provided in response to children's sensitive periods, writing comes before reading. This writing should reflect a creative expression of the children. In order to make this freedom of expression possible, mastery of a number of skills is necessary. The adult in the Montessori environment helps the children to acquire these necessary skills through peripheral teaching so that the children themselves can explode into true creativity.

The same is true for music. Music theory, ear training, and movement give children the necessary components of the system. Mastering these components provides children with a medium with which they may creatively express themselves and thereby continue to expand their self-creation. Whether with language or music, the creativity of the children is the driving force which sustains the experience which results in the mastery of a set of skills as an integral part of their own self- development.

Playing extemporaneously comes before recording one's own compositions on paper. Through the reading and performing of one's own compositions comes the understanding of the meaning of notation. Then follows the reading and playing of the works of other composers.

The production of music initially involves the Montessori bells and tone bars. Later, a monochord, piano, and other percussion and melodic instruments such as the Orff instruments can be used. Exploration of these may lead to composition, concerts, accompaniment for dramatic productions, the scientific study of sound production, etc.

In relation to the entire Montessori program, music is an integral part of the integrated curriculum. It is related to mathematics, to language, to science, to history, etc.; and, therefore, it emerges frequently in

CURRICULUM RESOURCES

the life of the class. In the study of music history the children can do research on the development of music and express this research in a time line. They can relate the instruments, composers, musical forms and literature to the country of origin, art, architecture, and politics of the times.

Additional information on Montessori music is available in the doctoral dissertation, The Montessori Music Curriculum for Children up to Six Years of Age, by Jean Karen Miller. Many of the activities it describes are appropriate for the elementary-age child. It may be obtained from University Microfilms International, 300 North Zeeb Road, Ann Arbor, Michigan 48106; or 18 Bedford Row, London, WC1R 4EJ, England. The order number is 8109598. In the United States, University Microfilms has an 800 telephone number.

Jean K. Miller

MUSIC FOR THE PRESCHOOL
SIMPLE INVENTORY
MATERIALS FROM NIENHUIS

0.063.A0	bells
0.063.B0	2 keyboards
0.063.C0	1 wooden staff board
0.063.D0	2 wooden staff boards
0.063.E1	box with musical signs and notes
0.063.F0	bell striker (3)
0.063.G0	damper (3)
0.064.00	music strip boards
1.615.00	cabinet for bells
5.342.00	Children's Songs by Sanford Jones
5.344.00	Folk Songs by Sanford Jones

MUSIC FOR THE PRESCHOOL
OTHER MATERIALS TO BUY

pictures of composers
records - Sanford Jones
music history records - Martha Braedon Jones (NAMTA)
Maccheroni card material - Jean K. Miller

MUSIC FOR THE ELEMENTARY

All of the above materials are appropriate for the elementary class. In addition the following materials are needed:

0.100.A0	tone bars
0.100.A1	2 tone bar keyboards
0.100.A2	striker (5)
1.620.00	cabinet for tone bars

CURRICULUM RESOURCES

ART

INTRODUCTION

In Montessori, adults aid children in the development of skills in order that they may creatively express themselves through various media. Children are shown techniques for using different kinds of art materials, but they are not told what they have to do with those materials. The activity that ensues is the child's choice. For this reason, one would not expect to see art projects in a Montessori class where everyone is attempting to produce the same thing.

In addition to art expression for its own sake, art serves as an integrating factor for the rest of the curriculum. Children may utilize art for such things as geometrical drawings, geographical maps, mathematical graphing, or illustrations for history, botany, zoology, social studies, geology, geography, architecture, physics, etc. With a variety of techniques and media at their disposal, elementary-age children may choose appropriate forms of artistic expression for other areas of the curriculum.

A study of the historical development of artistic expression is made available within the history material. This begins at the preschool level and is developed first as an idea by itself; then, as the children mature, it is related to architecture, religion, music, politics, literature, inventions, exploration, etc. Later, it is again taken by itself and studied more deeply. Appreciation exercises are a natural part of the historical study.

In the preschool, art materials are kept on their own section of shelving. This shelving is usually near an easal. The art materials are available as a choice as are the rest of the materials in the classroom environment.

In the elementary, the art studio should be immediately adjacent to, or occupy a secluded section of the classroom environment. In it should be available the following techniques and media:

Crayons, chalk and other drawing media
Painting techniques
Clays and other modeling media
Textiles
Paper
Structuring
Printing techniques
Inks and dyes
Carving media

The above are detailed in *Guidelines for Art Activities* by Nell Weniger, available from Nienhuis Montessori USA (item number 5.673.00).

Jean K. Miller

SUPPLIER DIRECTORY

SUPPLIER	SERVICES
ABC School Supply, Inc. 6500 Peachtree Ind. Blvd. Box 4750 Norcross, GA 30071	Oak book display rack, assorted supplies
Albanesi Education Center Montessori Resource Dept. 4331 Allencrest Lane Dallas, TX 75244	Picture card reading materials, materials that compliment Montessori curriculum
All West Pet Supply Co. 4200 Monroe St. Box 16565 Denver, CO 80216	Will accept POs from Public Schools
American Montessori Society 150 Fifth Ave. New York, NY 10011	Headquarters for AMS training, school affiliation, Montessori supplies, books
Apple Computer, Inc. 904 Caribbean Dr. Sunnyvale, CA 94086	Best price for Apple 2 Es and Macs
Association Montessori International (AMI/USA) 170 W. Scholfield Rd. Rochester, NY 14617	Liaison group with AMI in Holland, center for Montessori publications, training and school affiliation information
Baumbach 640 National Mountain View, CA 94043	Resource for small, colored plastic drawers
Beckley Cardy Box 320 Bennett, CO 80112	Large assortment of school and office supplies
Bobay's Appliances, Inc. 1130 W. Evans Denver, CO 80223	Source of two cubic foot refrigerator
Butler Paper Box 5248 Denver, CO 80217	Assortment of paper supplies
Cadillac Plastic & Chemical Co. 4990 Olive St. Commerce City, CO 80022	Clear plastic vinyl, 54 in. wide for covering time lines, sewing folders, etc.
Cards of Knowledge Box 653 Durham, CT 06422	Colorful, informative Safari cards
Carolina Biological Supply Co. Box 7 Gladstone, OR 97027	Detailed scientific catalogue for live zoology and botany specimens

SUPPLIER DIRECTORY

Chaselle Arts & Crafts, Inc. 96 45 Gerwig Lane Columbia, MD 21046	All colors of kraft rolls of bulletin board paper
Colburn School Supply Co. 999 S. Jason Denver, CO 80223	Wide variety of school and office supplies, school furniture, art easel center
Cole Box 1717 Pasadena, TX 77501	Resource for children's Spanish paperback books and records
Comite Hispano Montessori 2127 S. 35th Ave. Omaha, NE 68105	Group to promote Montessori education and Spanish-speaking people in the USA, Central America and South America, Montessori classic literature in Spanish
Community Playthings Rifton, NY 12471	Excellent wooden furniture, nice painting aprons
Craft Shop (Save the Children's) 3200 S. 76th Street Box 33902 Philadelphia, PA 19142-0900	American Indian crafts and crafts from around the world
DLM Teaching Resources Box 4500 One DLM Park Allen, TX 75002	Assortment of reading, language, thinking materials
Education Systems 38395 Trifone Road Sage, CA 92343	Spanish sandpaper alphabet, moveable alphabet, word-picture matching
Follow Me Box 916 Arvada, CO 80001	Spanish language beginning books, tapes, picture card and reading label classified nomenclatures
Great Books Foundation 40 East Huron Street Chicago, IL 60611-2782	Reading series, discussion leader guides
In-Print for Children 2113 Kenmore Ave. Glenside, PA 19038	Variety of classified card materials printed on heavy card stock

SUPPLIER DIRECTORY

Kaybee Montessori 4717 Chesapeake St. NW Washington, DC 20016	Imported Montessori materials from Italy and India
H. Kamimoto String Instruments 198 Jackson San Jose, CA 95112	Smallest violins for Suzuki
Lillian Vernon 510 S. Fulton Ave. Mount Vernon, NY 10550	Useful commercial seasonal catalog of odds and ends
Link the Language Company 1895 Dudley St. Lakewood, CO 80215	"Big" book resource
Little Star Montessori School Supply House Star Route 38 Winthrop, WA 98862	Moveable continental drift globe, nice child's story of Maria Montessori's life
Marisol Imports Box 723 Boulder, CO 80306	Mexican imports
Michael Olaf 5817 College Ave. Oakland, CA 94618	Assortment of books, tapes, practical life and science supplies for young children
Modern Curriculum Press 13900 Prospect Rd. Cleveland, OH 44136	History and science books for elementary
Montessori Creative Portfolio Box 15132-L Cincinnati, OH 45215	Many beautifully drawn picture card reading materials — primary and elementary
Montessori Printing Specialties 29 Ellenhall Square Scarborough, Ontario Canada M1W 3B1	Excellent quality paper and paperbooks for various stages of penmanship and math
Montessori Services 816 King Street Santa Rosa, CA 95404	Great assortment of materials to support the Montessori primary and lower elementary curriculum
NAMTA (North American Montessori Teachers' Association) 2859 Scarborough Rd. Cleveland Heights, OH 44118	Montessori workshops, journals, media

SUPPLIER DIRECTORY

Nasco West, Inc. 1524 Princeton Ave. Box 3837 Modesto, CA 95352	Metric scales and weights, materials for botany, zoology, geography, science experiments
Nature Company Box 2310 Berkeley, CA 94702	Seasonal catalog of beautiful nature posters, books, videos, tapes
National Geographic Educational Service Dept. 81 Washington, DC 20036	Excellent economical collections of "Books for Young Explorers," great globes, maps, books
Nienhuis Montessori USA 320 Pioneer Way Mountain View, CA 94041	Recognized manufacturer of AMI-approved Montessori apparatus
Par Imports Isabell Thompson 3355 S. Akron St. Denver, CO 80231	Beautiful wall hangings and crafts from Peru
Parent Child Press Box 767 Altoona, PA 16603	Montessori books, art appreciation, postcard materials
Scholastic, Inc. 2931 E. McCarty Jefferson City, MO 65102	More "Big" books, also in Spanish
School Specialty Supply, Inc. 10844 Clarkson St. Denver, CO 80233	Heavy duty paper cutters, 30-drawer storage cabinets
Shorewood Fine Art Reproductions, Inc. 27 Glen Road Sandy Hook, CT 06482	Complete selection of art print reproductions and support biographical materials
Smith & Hawken 25 Corte Madera Mill Valley, CA 94941	Children-sized gardening tools, beautiful pots, seeds
Suzuki Corporation Box 261030 San Diego, CA 92126	Orff music instruments, rhythm band instruments, Suzuki violins
UNICEF 475 Oberlin Ave. S. Lakewood, NJ 08701	Notecards, games, atlas-world views

SUPPLIER DIRECTORY

United Nations Gift Shop G A 45 A New York, NY 10017	Silk flags and colored postcards of member nations
Waterwheel Press 203 - 42nd St. Des Moines, IA 50312	Science, nature posters, cultural studies prints
Waterwheel Press Box 4 University Park, IA 52595	Student atlases, president prints, wives of presidents prints, history booklets
Wm C. Brown Publishers Box 539 2460 Kerper Blvd. Dubuque, IA 52004	Excellent books
Woodlite 1920 Donmaur Dr. Crest Hill, IL 60435	Large parts of animal and plant card material, large, bright, knobbed puzzle
Wright Group 10949 Technology Place San Diego, CA 92127	Elementary level reading books on interesting topics like "Search for the Past" and "The Changing Earth"

LANGUAGE ARTS

MONTESSORI READING AND LANGUAGE ARTS

BILINGUAL EDUCATION

A special chapter providing an insightful view of Montessori language arts in light of current trends, including bilingual education.

LANGUAGE ARTS

THE TEACHING OF READING AND LANGUAGE ARTS IN THE MONTESSORI SCHOOL

by Mary Maher Boehnlein, Ph.D.

- ***"Whole language" or "holistic" approaches to teaching reading that became popular in the 1980s are very similar to Montessori's once controversial integrated reading program.***
- ***Public schools are looking at Montessori as an alternative education model but need to understand its scope and sequence of curriculum to implement it properly.***
- ***Integrating Montessori with other methods at variance with the Montessori curriculum can destroy the Montessori curriculum.***
- ***There are critical differences in sequence and activity between Montessori, whole language programs, and the isolated skill approach.***
- ***Special Montessori apparatus, teacher-prepared exercises, and selected literature and reference books are needed to fully implement the Montessori language program.***

INTRODUCTION

Of all the areas in the Montessori curriculum, the teaching of reading and the language arts has been the most debated and least understood. Until the 1980s and the recent popularity of the "whole language" or "holistic" approaches to teaching reading, Montessorians had a difficult time convincing traditional educators that the Montessori approach to helping children learn to read through exploration of a prepared environment was a viable and successful approach. Her emphasis was always on meaning first, although many of her interpreters focused mainly on her approach to teaching symbol-sound relationships. Yet as early as 1917 Montessori wrote, "Reading is an affair of the *intelligence* [and] interpretation (comprehension) alone constitutes true reading" (p. 176).

When Montessori was reintroduced in the United States in the 1960s, direct phonics instruction methods were being touted as the best way to teach reading in traditional education. This isolated skills approach to teaching reading became firmly entrenched and basal readers, used in 90 percent of the classrooms in the United States, were revised to reflect this intensive and isolated phonics approach. The Montessori approach, on the other hand, was and continues to be an integrated language arts approach in which speaking, reading, writing, listening, and grammar permeate the curriculum and are taught in tandem. In fact, using the words "teach" and "taught" are somewhat misleading since Montessori originally had no intention of developing pedagogical methods to do either. She wanted to provide an environment in which children could explore things of intense interest to them. She called these items "keys" or "aids to life." Therefore, this part of the curriculum is labeled "Language" rather than separating reading and English, to indicate a wholeness, a facet of the child's development.

Dr. Mary Boehnlein is Chairperson of the Specialized Instructional Programs at Cleveland State University and is Director of Research for the North American Montessori Teachers' Association. She was recently selected for a teacher leader's post with the Reading Recovery programs of Ohio State University.

LANGUAGE ARTS

The teaching of reading never is considered as separate and distinct from other areas of the language *arts in the Montessori curriculum. This view of the language arts, that it must be presented to the child as an* integrated whole, now has become acceptable and is called whole language and/or literature-based reading. There are differences between the Montessori approach to language and the current whole language approach, however, which are elucidated later in this chapter.

Public school personnel wishing to implement the Montessori curriculum need to know the scope and sequence of the curriculum, the materials needed to implement it, and most importantly, the instructional theory in which it is based. Without this understanding, there may be a tendency to superimpose or overlay a method of instruction which is philosophically and psychologically at variance with the Montessori approach. An example is the use of a basal reader system as the main reading approach and using Montessori materials to supplement or for reinforcement activities. This approach can destroy a Montessori curriculum which depends upon the Montessori language component as a unifying thread throughout the preschool and elementary years. All areas of the Montessori curriculum are dependent and interdependent on language skills and language appreciation learned at the developmentally appropriate age and in correlation with the rest of the curriculum. Geometry, mathematics, science, social studies, music, art, and movement are interrelated with the child's understanding and skill in reading, grammar, writing, and history of language. To impose a reading system foreign to the Montessori approach is to weaken the entire elementary curriculum.

Public school personnel wishing to implement the Montessori curriculum need to know the scope and sequence of the curriculum, the materials needed to implement it, and most importantly, the instructional theory in which it is based.

This chapter will describe the Montessori language approach and its similarities to and differences from the whole language and isolated skills approaches currently used in United States' schools. Also described are the practical aspects of materials acquisition and cost of implementing a Montessori language curriculum in a public school setting.

MONTESSORI LANGUAGE THEORY

According to Stephenson (1986), Montessori stressed that language must not be related to learning to read and write but related to the development of the child — the child must be given the opportunity to develop language. Children are born with the potentiality for learning a language and for absorbing the particular language or languages spoken around them. The child, according to Montessori, has to acquire language to be a full member of the society. What Montessori called potential is similar to what Noam Chomsky (1968) called the Language Acquisition Device (LAD). LAD conveys the idea that certain tendencies are inherited by all children which cause them to begin to use words in essentially the same manner. Chomsky's research on children from all over the world concluded that all children seemed to develop grammar that was similar in sequence and content. While research carried out since Chomsky's has not clearly substantiated his claim, there is mounting evidence to substantiate the difference in the grammar of beginning speakers and that of children who have acquired the rules of language usage.

Montessori's observations of language development also are consistent with results of recent language development research and convey knowledge needed by adults to provide an environment that is language stimulating. Linguists agree that from birth to age five the child constructs a working language. Of all Montessori's sensitive periods, the times when a child is most receptive to specific types of learning and during which the child can learn effortlessly, language is the longest during the first plane of development, ages birth through six. Vygotsky, the Russian linguist, called the preschooler a linguistic genius. By age three the child has already made the discovery of the sounds of the group language, the vocabulary, the grammar, syntax, sentence structure, and uses language for cognitive processing. While Piaget refers to this stage of cognitive development as *preoperational*, Ripple, Biehler, and Jaquish (1982) point out that the two to five year old is capable of forming and modifying schemes at an impressive rate.

Vocabulary acquisition is an example of the forming and modifying of cognitive schematic structures. With each new word a scheme is learned that reflects awareness of a particular idea or variation of a basic idea. According to Carey (1977), the vocabulary of a six year old ranges between 8,000 and 14,000 words. That is an impressive amount of cognitive activity in the first five years of life. More impressive, according to Piaget, is that preschoolers are unable to decenter and therefore must concentrate on one quality at a time yet they have modified their schemata of language to include that fantastic number of words and their meanings.

Montessori knew the child was fascinated with words at this young age and included many opportunities in the preschool curriculum to learn new words. Her method included concrete materials and visual aids to enhance the child's understanding of the meanings of the words. The basic material she developed was nomenclature cards with words and pictures. In working with the nomenclature materials, the child also begins to categorize and organize the new vocabulary into schemata.

THE IMPORTANCE OF MONTESSORI PRESCHOOL EXPERIENCE TO LANGUAGE LEARNING

Montessori observed that the six year old with the Montessori preschool (Casa) experience already possessed the rudiments of written language. Without this Casa experience, noted Grazzini (1981), the task of learning written language will be more difficult but certainly not impossible. He further explained that the needs of the six year old are different from the Casa child. The preschooler doesn't really know he is going to school but the six year old knows it. This may in itself make him fearful. Also, by age six, the sensitive period for language is over and some of the concrete materials used in the Casa may not interest the child enough to ensure the necessary repetition of activity. "The child who comes without this preceding Montessori experience is a child whom we could say is handicapped because he is deprived. This difference, this passage from deprivation to wealth, cannot be filled in with the same procedures used in the Casa because the sensitive period is past and this passage then for a child of six has to be filled in with remedial methods" (Grazzini, 1981). Special ways of teaching are necessary when a child has not acquired learning when it was originally presented. It implies a missed opportunity to learn during the most sensitive period. The material or concepts must be presented in a more enticing as well as in an instructionally sound manner because the child must make a conscious effort to learn, unlike during the sensitive period when learning is almost unconscious and absorbed effortlessly.

THE MONTESSORI PRESCHOOL LANGUAGE CURRICULUM

In the Montessori curriculum for the child age three to six there is stress on vocabulary enrichment through words connected with the sensorial materials and their attributes, through classified nomenclature relating to plant and animal life, and all other areas of the curriculum. Integrated with this are the early stages of bringing grammar and syntax to the child's consciousness through the study of how words function in a sentence and how simple sentences can be analyzed. The child hears poetry, stories, rhymes, and conversation. Everything in the classroom has a name which the child eventually learns to read, and demonstrates comprehension of by placing the labels on classroom objects. A unique characteristic of a Montessori preschool is the atmosphere which encourages and provides constant opportunity for the children to use oral language and to experience an adult model of responsible and humanely sensitive use of language.

Through work with the sensorial materials the child's muscles are prepared for the act of handwriting. Use of the knobbed cylinders and the metal insets allows the child to develop muscles in the three fingers used in the prehensile grasp of the writing instrument. The work with the pink tower helps the child acquire a firmness of wrist, particularly placing the lightest and smallest cube. When using the plane geometric insets, the child follows the outline with two of the fingers needed for writing and absorbs a muscular memory of basic shapes. Placing the insets on the outline cards calls for recognition of the shape. The practical life activity of washing the hands finger by finger increases the blood circulation which increases sensitivity to tactile material as well as calls the child's attention to the hand. Lightness of touch is developed through the use of the sandpaper touch boards and with the two finger tracing of the sandpaper letters and numerals. Even the sound cylinders with their particular shape enhance the flexibility of the wrist. "If the child has had an enriched Casa experience, he has prehension, hands that are firm and stable, lightness of touch, admirable and loose; a hand that is ready to write" (Grazzini, 1981).

Finally, in the Casa, stated Grazzini (1981), "there is also the development of a love for language in all aspects; the desire to speak and listen, the desire to communicate, and the technical or mechanical skills given by the sensorial material." Love of language is encouraged by presenting the story of the alphabet at the beginning of the elementary level. The child is given the story of the alphabet not only for information but to appreciate this great gift.

In the Casa children play sound games which help them identify the sounds of their language. When a child can differentiate sounds, the symbols for the sounds are introduced through tracing sandpaper letters.

The letters are introduced through their formation or shape and their sound. Thus handwriting is integrated with the learning of the symbol and its sound. Since the child at age four is at a pre-operational stage, letters and sounds are presented in isolation. This approach of Montessori certainly seems to match the child's developmental needs according to Piagetian theory that the child can only concentrate on one quality at a time. The sound of the letter becomes ingrained through the simultaneous vocalization of the sound with the muscular tracing of the shape. The highest frequency sounds are presented in this manner. The sandpaper letters are never used to blend sounds into words as this would imply a synthetic approach to reading. Rather, Montessori proposed an analytic approach to reading just as the whole language proponents advocate today. Building on the analysis of sounds in words used in the sound games, the child is led to analyze or hear sounds in words through the use of the moveable alphabet. The sequence of learning is hearing sounds, then connecting symbol and sound, and finally, analysis of sound within words through use of the moveable alphabet to compose the child's own language. Later in reading the child will analyze and synthesize simultaneously as do all good readers. These early experiences help the child acquire the idea that reading requires both analysis and synthesis and is always aimed at obtaining meaning from print.

The child uses a moveable alphabet to compose words, and this activity requires that the child analyze words into component sounds. This is a critical difference between the Montessori approach to reading and the isolated skills approach; writing and reading are integrally related. That is, the child comes to reading through analysis rather than synthesis. The child is not asked to articulate and synthesize isolated sounds in words when composing, but instead is asked to hear the sounds of the word and choose the correct cut-out letters to represent the sounds. The child discovers or "bursts" into reading when it becomes obvious that he or she and others can read what he or she has written and read it **silently**. Thus, the child becomes metacognitively aware of what a person does when reading. Allowing children to discover the reading process through their personal writing provides a powerful incentive to write and read — to communicate.

The preschool curriculum includes many other activities and materials to round out the reading and writing experiences of the children. There are beginning experiences in spelling, use of the dictionary, punctuation, capitalization, and the learning of high frequency non-phonetically regular words known as puzzle words. Beginning word analysis of suffixes and prefixes, the study of compound words, and reading in all other subject areas are also included, particularly through the use of classified nomenclature card sets.

According to Miller (1989):

> Accommodation of different learning styles comes with the extensive section of the language curriculum called classified nomenclature. This consists of many sets of pictures and word cards, each set constructed around a central theme (i.e., animals, objects in the kitchen, transportation on land, sea, air, tools, clothing, etc.). Children are taught the names of the objects pictured, if they don't already know them, by the teacher or by other children in the classroom. They then can do an exercise of matching the label to the picture. Children who tend towards an auditory approach to reading such as sounding out words can usually sound out the first letter and intuit the rest of the word by using the picture as a clue. Children who are more visual learners may focus on

> the configuration of the word. The sets of classified nomenclature have a built in control of error either a separate picture with its label attached, or an identical label on the back of the original picture. The movement involved with the matching of the pictures is also helpful to the kinesthetic learner. Additionally, the use of a central theme for each set of nomenclature cards helps children build their ability to relate objects with an idea or concept and to categorize and classify.

In the Casa, by age six the majority of children read simple sentences and some are able to read short books with full comprehension. They also can write sentences and short stories and make use of invented spelling for more lengthy words.

DIFFERENCES BETWEEN MONTESSORI AND OTHER BEGINNING READING APPROACHES

There are critical differences in sequence and activity of the Montessori language curriculum from the whole language and the isolated skills approach because of the age and cognitive stage of the child, the philosophy of learning, and psychology of the child. Whole language proponents believe that just as language is learned through actually using it rather than through practicing separate parts and later synthesizing them, the child will learn to read and write quite naturally when these processes are learned incidentally and out of the need to communicate. Altwerger, Edelsky, and Flores (1987) describe whole language as a set of beliefs, a perspective rather than a method. Like Montessorians, whole language proponents state that belief shapes teaching practice. According to Altwerger et al., whole language is not a phonics approach, a whole word approach, a revitalized language experience approach, or another type of open education. Whole language does not make use of exercises in reading and writing but rather relies heavily on literature or other environmental print to naturally stimulate and motivate the child to want to learn to read and write by active engagement. This is similar to the Montessori belief that true reading is for meaning and the children will learn to read by reading what they have written or what they want to read. Montessori believed that once provided the visual key, the alphabet, the child would write and reading would follow quite naturally.

However, for the whole language proponents, there would be no isolated introduction of the sounds of the language nor the symbols. Nor would there be any contrived language materials or activities. Symbols and sounds would be learned from enriched experiences with print and by the adult scribing for the child. As the child sees the spoken word written by the adult and then attempts to read it, the child will come to recognize symbol-sound relationships. Montessori does have some prescribed reading and writing activities but considers them only keys to get the child started. This appears to be the major difference between the two approaches.

Both the whole language and the Montessori approaches differ from the isolated skills approach quite significantly in both philosophy and child psychology. The isolated skills approach is allied with the behaviorist approach to learning which espouses a view that learning is done in bits and pieces and later synthesized. This approach to reading is characterized by isolated skill drills, elaborate management and evaluation plans, and use of large amounts of work sheet type exercises. Less emphasis is placed on reading quality literature or material with a sustained story line, and more emphasis is placed on reading short segments of text often lacking the richness and complexities of natural language. The child is viewed as dependent. Reading is something *taught to* the child rather than *learned by* the child. There is little true integration of reading and composition and the other language arts; all are studied in isolation.

Proponents of this approach cite learning theory on overlearning and time on task to support their approach. The proponents are behavorists who view learning as a series of reactions of the learner to positive or negative feedback from others. The child is expected to master many bits and pieces of information and through carefully sequenced steps eventually will synthesize the information into a meaningful whole. Believers in this approach do not view the learner as proactive.

Children in the behavioral approach to learning tend to do well on standardized reading tests because the exercises they practice are similar to standardized test items — isolated bits of information. Studies of independent reading, interest, and motivation to read for pleasure or information of children who learn to read in this approach, indicate little enthusiasm for reading in any form. Whole language and Montessori studies, on the other hand, describe children who read for both pleasure and information and who produce much composition work.

THE MONTESSORI ELEMENTARY LANGUAGE CURRICULUM

Given the above explanations of the way in which beginning reading is approached in the Montessori curriculum, public schools wishing to adopt the approach must give careful consideration to the starting age of the children, the admission of children beyond kindergarten level, and the autonomy given the Montessori teacher to implement a Montessori curriculum rather than a hybrid curriculum. As stated above, the Casa program was designed to be developmentally appropriate for the three- to six-year-old child; it is not appropriate for the first through third grade child and will not succeed with children of that age.

Public school administrators also should be aware that the elementary Montessori teacher may not have full training in the preschool methods and therefore should not be asked to implement a preschool program at the elementary level. The elementary curriculum demands a solid base in written communication if the child is to successfully benefit from it. Without this solid base, the elementary teacher must employ a special approach to beginning reading; however, the child's access to the richness of the rest of the curriculum is limited until reading strategies are acquired. Because of this, it is strongly recommended that public schools not begin Montessori programs that do not at least admit four year olds and preferably three year olds.

Provided the child has experienced a rich Casa program, the elementary language curriculum consists of the following areas of study:

History of language
Parts of speech
Sentence analysis
Written composition
Reading
Literature study
Oral language
Creative drama

Basic to all the above is the art of listening and the Casa experience of the use of language to help in the process of adaptation to the life of the family and the small society of the classroom. Stephenson (1986) stated that one major aim at the elementary level is to build on the Casa experience and then to encourage the use of language in the process of reasoned thought. Elementary children need a command of reasoned language in order to communicate to society and to understand their part in it because the elementary child is now moving into the larger society beyond the family and classroom. For this reason silent working and silence are not requirements of a Montessori class. Children are not asked to whisper but rather to learn to control their voices so as not to interfere with others. Only through oral interaction will children extend their vocabulary and become self-assured when speaking to others.

Within the Montessori elementary curriculum there is emphasis on discussion, free speech bounded only by the rules of social convention, and on oral reports given on various individual and group projects. Children are helped to make these reports interesting to others, to teach others, and to expand the work of the class. According to Stephenson, the oral report helps the child to appreciate and understand responsibility to society. The reports are the result of seriously planned individual and small group research.

Other areas of oral language in the elementary curriculum are prepared speeches around a self-selected topic, debates, particularly at the nine to twelve level, the recitation and reading of poetry, preparing and presenting dialogues such as between two historical characters, dramatic presentations which involve interpretive reading, and finally the writing and producing of plays.

LANGUAGE ARTS

WRITTEN COMPOSITION AND GRAMMAR

The Montessori curriculum, with its emphasis on the integration of the social sciences and the humanities, provides rich opportunities for both oral and written language. Children read, write, and speak about their study in all these areas. The means to do this successfully are ensured by a continuous study of language through reading, word analysis called word study by Montessorians, and the study of grammar. This interrelated psycholinguistic approach to the study of language is a unique contribution of Montessori that has gone quite unrecognized by traditional educators.

Montessori devoted much research to the development and testing of grammar materials that helped the child integrate the study of grammar with reading comprehension. In *Psychogrammar* Montessori said, "The study of the function of words is a way to penetrate language which already exists in the child and it is a means for perfecting and fixing the shape of his language. Therefore, it is extremely useful to the child who is organizing his language at that time" (Grazzini, 1982).

At the elementary level grammar is studied as an aid to reading comprehension. Therefore, grammar is preparation for reading and the child need not be a proficient reader to study grammar. The study of grammar also will help children express themselves better in writing. The goal of grammar study is to aid reading comprehension and skill in writing. Montessori said that the study of grammar slows the reading process but in the end it increases the understanding (Grazzini, 1982).

Unlike traditional grammar exercises, the Montessori materials are highly motivating and interesting exploratory exercises that allow the child to *discover* what he or she actually performs in speaking, writing, and reading.

GRAMMAR STUDY

The study of grammar begins in the preschool with the function of words or in the traditional curriculum, parts of speech, which are presented very dramatically with concrete materials. Later in the elementary, children are given stories of the etymology of the names of the parts of speech. In addition, Montessori invented symbols for the parts of speech, each with its own meaning and story. Throughout this study, which continues into the early elementary years, words are always studied within the context of meaningful sentences. Syntax, the order of words in a sentence, is learned by using cut-up sentences and making permutations to discover which order makes sensible sentences.

A very important elementary Montessori material consists of grammar boxes. Grammar boxes isolate and focus attention on the parts of speech and their qualities. They lead the child to make his or her own abstractions concerning the function of the part of speech. Follow-up activities include exploration of the etymology of the words in sentences, categorization of words by part of speech in sentences, word study of the root form of the words, and later tracing the history of changes in the meaning of words over time.

The grammar boxes are considered keys and do not teach the whole of grammar. Later, at ages nine to twelve, the child will use traditional grammar books and study what linguists have said about the parts of speech. The study at this age becomes more technical and will be better understood because of the solid foundation given by the work with the grammar boxes. In addition, the child discovers that there are many more cases than the grammar boxes presented.

Grammar box work, although isolating parts of speech, uses complete sentences. The child always goes from a whole sentence to the study of a part of the sentence. Through this analysis the child gains greater comprehension of what is read and learns quite naturally how choice of words helps one write clearly and effectively. The command cards that accompany the boxes provide opportunity for the child not only to learn the syntax of the language but also provide practice in reading comprehension of passages of more than one sentence in length. The purpose of the commands, according to Montessori, is to help clarify the meanings of words in context, the context of the total meaningful sentence. Often the commands are done cooperatively by groups of children, and thus provide opportunity for discussion and resolution of meaning and interpretation.

Sentence Analysis

At the same time the child is exploring the functions of words, another material, sentence analysis, is introduced and used from preschool through the elementary grades. This material helps the child learn the parts of the sentences such as subject, predicate, direct object, indirect object, clauses; and the types of sentences such as simple, compound, complex, and compound-complex. The material, consisting of several parts, is used throughout the elementary years to lead the child deeper and deeper into the understanding of the relationship of words to parts of sentences, and finally to in-depth study of the noun and its attributes and the verb and all its tenses and moods.

Written Communication and Creative Dramatics

Concurrently to the children's study of language through reading and grammar, the total Montessori curriculum requires independent research and sharing of that knowledge and information through written composition, oral reporting, or through dramatic presentations. Since the children are allowed to choose areas of exploration, they usually are eager to seek information and to learn how to communicate it to their peers. The teacher serves as a guide and does not impose a writing curriculum in any preconceived sequence. Rather, written work is guided individually by the teacher with help given on any aspect of writing as the child needs it. Children learn the process of writing quite naturally in a Montessori classroom, and with multi-age groupings children have other competent writers older than themselves who can help them. They also learn by helping the younger children. Both hand and computer generated written work is produced in Montessori classrooms.

The cultural life in a Montessori classroom provides great impetus to creative expression. Music, art, and drama are integrated into the regular life in the classroom and are naturally interrelated with all other areas of the curriculum. They are also experienced, as children attend community functions as a group. In the classroom they experience quality literature and poetry read to them by the teacher and read by themselves. Teachers also tell stories and encourage celebrations and the learning of cultural and historical aspects of communication. It is no wonder that they ask to write their own plays or musical productions. Heathcote, the well known dramatics educator from Great Britain, said that

> Dramatizing makes it possible to isolate an event or to compare one event with another, to look at events that have happened to other people in other places and times, perhaps, or to look at one's own experience after the event, within the safety of knowing that just at this moment it is not really happening (Kahn, 1984).

The use of creative dramatics allows for creative expression as well as for solidifying knowledge and feelings learned through the Montessori curriculum experiences. Creative dramatics, Jones (1984) stated, helps in the development of a healthy imagination that serves to integrate the personality.

In a Montessori classroom, children write their own plays and often write their own music for musical productions. These productions, Jones noted, "become the focus for integrating other kinds of activities" such as researching characters and the period of history, using the grammar symbols on the portions of the text they write, and learning voice projection, articulation, and expression. Finally, children learn poise and the value of group cooperative effort. Through creative drama, written and produced by the children, all the language arts skills are practiced in an integrated manner.

Reading

Reading in a Montessori elementary classroom is done through trade books, informational materials, and classic literature such as the Junior Great Books program, rather than through a basal reader program. Children learn to read as they read to learn. Children set their own purposes for reading when they decide to do an oral or written report.

There is no need to purchase a basal reader series and no advantage to having them in the elementary classroom. Any reading skill to be learned can be learned through the use of trade books and through

LANGUAGE ARTS

content area reading materials. Furthermore, these skills will be learned easily and with more interest if they are needed by the child to understand material for self-selected research projects or through self-selected quality children's literature.

Public schools which require the Montessori classrooms to teach reading through the imposition of the basal reader program lose the advantages of the holistic language approach as well as impose a teaching time restraint which interferes with the full implementation of the Montessori curriculum. Teachers and pupils spend time in artificially imposed instructional sequences and less time reading sustained text with high motivation. Far fewer individual and group research reports and less creative writing are accomplished because of the unnecessary group reading instruction. In addition, this imposed pace of the basal instruction actually slows the acquisition of reading strategies because it is not individualized according to the child's needs.

Lynch (1987) states:

> Because the basal stories are written to incorporate a specific skill, not to engage a child's heart and mind, they are not very interesting. These short stories do not allow children to experience the purpose and pleasure of real reading. Books, interesting books, are often available to our children only as rewards, *after* they have finished their work. And as a result fluent readers practice reading and become more fluent, while less fluent readers are deprived of the practice they so need. They are given more lessons, more workbook pages, and more tests. They experience more loss of self-esteem and come to look upon reading as something to be avoided (p. viii).

Reading in the Montessori elementary classroom is taught mainly through a print enriched environment by a trained Montessori teacher who understands the reading and writing processes. The Great Lessons and Key Lessons given in other areas of the curriculum provide inspiration and stimulate interest in learning through reading. There is a wealth of resource material at various reading levels provided in the classroom as well as in the school library. If the child needs more than this, going out into the community environment to a local library is arranged. At the elementary level the child learns to read by reading to learn in interesting material rather than in basal reader material.

The classroom and school library have single and multiple copies of children's literature books (trade books) and all children read during a self-selected time or during group sustained silent reading time. The study of literary style and content is an important part of the reading work done by the child and often is integrated with the above described grammar study. An individualized, literature based program has been the hallmark of the Montessori elementary curriculum for over fifty years.

Some teachers add the Junior Great Books to encourage the art of discussion and to correlate with the children's study of history and geography. In connection with the Junior Great Books teachers and students learn the art of the seminar. "The seminar discussion is a conversation conducted in a manner conducive to shared insight. The aim of the seminar is to bring out ideas — ideas in the student" (Kahn, 1985). Usually the seminar is done after several children have read a book, either fiction or non-fiction. Through skillful discussion leading, the teacher and the group deal with literal to evaluative thinking, from factual to evaluative questions.

> The principles of the seminar give the Montessori teacher an opportunity to be an explorer of the essential Montessori ideas. For implicit in the curriculum itself is a great humanist tradition presenting the unfolding development of life and history. The curriculum has a logic which appeals to the inner logic of the child. It is the natural tendency of the child towards truth and the capacity of the child's mind to comprehend the truth that gives Montessori elementary education its true impetus for which the seminar is a vital aid (Kahn, p. 18).

Reading, then, in the Montessori elementary curriculum is another means by which the child explores the prepared environment of the classroom and the wider society outside the classroom. All the skills identified by reading experts are practiced and learned by children in Montessori classrooms. The difference is that the skills are learned in a more natural and dynamic way because the child needs to learn them to continue his or her work. Another difference is that the skills are learned as they are needed rather than imposed by some artificial time table. Research of reading skill development in Montessori classrooms corroborates that children do learn to read well in this approach (Boehnlein, 1988).

LANGUAGE ARTS

MATERIALS NEEDED

Materials needed to fully implement the Montessori language curriculum consist of the standard Montessori apparatus (core materials) that can be purchased through authorized Montessori materials manufacturers (see lists in this book), teacher prepared exercises and consumable items, and literature and reference books purchased from traditional sources. While initial costs of fully equipping a classroom may seem high, over time the Montessori language curriculum is less expensive than a traditional curriculum which depends upon basal reader programs and all the workbooks and supplementary materials such as tests, spelling workbooks, handwriting books, English books, etc. that are bought for each child. In contrast, only a few duplicates of Montessori materials are provided in classrooms and the material is of such high quality that it lasts for years. The usual consumable supplies such as handwriting paper, notebooks to keep journals, writing and illustrating supplies are needed annually. In addition, appropriate containers to hold the consumable materials on the shelves, adequate reference materials, a classroom library of informational and children's literature are initial investments and on-going additions and replacements to be planned for in the budget.

EVALUATION

Evaluation of children's reading and writing progress is done in a variety of ways but always based on individual student performance. Teachers use daily anecdotal records, children's own records of their work, and the child's use of language and reading in real situations. While standardized and competency-based tests are used to evaluate children's progress, there is a danger in the exclusive use of these tests. As Watson and Crowley (1988) point out, standardized tests, basal reader tests, and competency tests are designed to measure a skills model of reading by testing isolated skills outside of their actual use. Language learning is too complex to reduce to a single numerical score, and a test score provides no information that is useful to teachers.

The Montessori teacher must know the district expectations and match them to the Montessori curriculum. While the goals of both the district and the Montessori curriculum are similar, the Montessori curriculum timetable for achieving these goals will vary from standard practice for very sound psychological and psycholinguistic reasons. Because of the three year teaching cycle, Montessori teachers will be evaluating with long-term goals in mind. They will be more concerned with evaluating children's use of thinking and problem solving strategies rather than merely evaluating hundreds of subskills. For example, a district might require that first graders be able to identify short vowels and long vowels at the end of first grade. Montessorians like whole language teachers, however, would not be concerned about this as a skill but rather would consider it a discovery that comes as the child explores spelling and grammar of the language. Furthermore, although the child was presented with the spelling patterns that relate to these vowel sound differences in the Montessori preschool, he or she would never be asked to memorize a phonics rule since this is not necessary to learn to read. This difference in what is considered evidence of normal progress in reading and writing needs to be recognized. The usual tests reflect the typical public school curriculum and do not reflect or measure the richness and depth of the Montessori curriculum. Evaluation instruments and methods should reflect the expectancies of the implemented curriculum rather than dictating the curriculum.

Montessori teachers, however, must help children learn to take standardized tests since this currently is required by our culture. Children need to learn the language of the test, and examples of such language in sample test format can prepare children for the test experience.

Evaluation of the Montessori language program must be done on more than pencil and paper tests. Children's portfolios should be kept from year to year with selected evidence of continuing progress of the child. This will be far more revealing than a test score. Administrators and teachers need to delineate and agree on what will be considered valid evidence of children's progress in language learning.

LANGUAGE ARTS

USEFUL SOURCES OF PROFESSIONAL AND CHILDREN'S BOOKS

American Library Association
50 East Huron Street
Chicago, Illinois 60611

Boynton/Cook Publishers, Inc.
P.O. Box 860
52 Upper Montclair Plaza
Upper Montclair, New Jersey 07043

Bulletin of the Center for Children's Books
University of Chicago Press
Journals Division
P.O. Box 37005
Chicago, Illinois 60637

Children's Book Council
678 Irving Place
New York, New York 10003

Council on Interracial Books for Children
Racism/Sexism Resource Center
1841 Broadway
New York, New York 10023-748

Dell Publishing Company
1 Dag Hammarskjold Plaza
245 E. 47th Street
New York, New York 10017
(Banbury Delta, Laurel Leaf, Standish, & Yearling Books)

Dial Books for Young Readers
E. P. Dutton Publishing Co.
2 Park Avenue
New York, New York 10016
(Pied Piper books)

Dormac, Inc.
P.O. Box 270459
San Diego, California 92128-0983
(Reading Corner books)

Good Apple
Box 299
Carthage, Illinois 62321

Great Books Foundation
40 East Huron Street
Chicago, Illinois 60611

Harper & Row
10 E. 53rd St.
New York, New York 10022
(Trophy books)

Heinemann Educational Books, Inc.
70 Court Street
Portsmouth, New Hampshire 03801

Holt, Rinehart & Winston
383 Madison Avenue
New York, New York 10017
(Owl books)

The Horn Book
Park Square Building
31 St. James Square
Boston, Massachusetts 02116

International Reading Association
800 Barksdale Road
P.O. Box 8139
Newark, Delaware 19711

LINK
The Language Company
1895 Dudley Street
Lakewood, Colorado 80215

Longman, Inc.
95 Church Street
White Plains, New York 10604
(Breakthrough books)

National Council of Teachers of English
1111 Kenyon Road
Urban, Illinois 61801

Penguin
40 W. 23rd St.
New York, New York 10010
(Puffin Books)

Reading Development Resources Ltd.
P.O. Box 36391
New York, New York 10085

Richard C. Owen, Publisher
P.O. Box 819
New York, New York 10085

Rigby Education
454 Virginia Street
Crystal Lake, Illinois 60014

Scholastic Inc.
Box 7502
Jefferson City, Missouri 65102

Scholastic-TAB Publications
123 Newkirk Road
Richmond Hill, Ontario LAC 3G5
Canada

Teachers & Writers Collaborative
5 Union Square West
New York, New York 10003

Teachers Networking
C/O Richard C. Owen, Publisher
P.O. Box 819
New York, New York 10085

Tott Publications
4492 Knobhill Drive
Bellbrook, Ohio 45305

Weston Woods
Weston, Connecticut 06883

Whole Language Consultants
140 Malcana Street
Winnipeg, Manitoba 2G 2S9
Canada

Whole Language Newsletter
C/O Adrian Peetom
Scholastic-TAB Publications
123 Newkirk Road
Richmond Hill, Ontario LAC 3G5
Canada

The Wright Group
10949 Technology Place
San Diego, California 92127

The Writing Company
1000 Culver Blvd.
Dept. E2, P.O. Box 802
Culver City, California 90230

Zephr Press
430 South Essex Lane
Tucson, Arizona 85711

REFERENCES

Altwerger, Bess; Edelsky, Carole; Flores, Barbara. (1987). Whole language: What's new? *Reading Teacher, 41(2),* 144-54.

Boehnlein, Mary (1988). Montessori research: *Analysis in restrospect.* Cleveland, Ohio: North American Montessori Teacher's Association.

Carey, S. (1977). The child as word learner. In M. Halle, J. Bresnan, & G. A. Miller (Eds.). *Linguistic theory and psychological reality.* Cambridge, Mass.: MIT Press.

Chomsky, N. (1968). *Language and mind.* New York: Harcourt, Brace, Jovanovich.

Grazzini, Camillo. (1981-82). Language lectures, 21st Elementary Training Course. Bergamo, Italy.

Kahn, David. (1985). Bringing the seminar discussion into the Montessori classroom. *The NAMTA Quarterly. 10(1),* 19.

Kahn, David. (1984). Drama and reading. *The NAMTA Quarterly. 9(1),* 1-6.

Heathcote, Dorothy. Quoted in Kahn, David. (1984). Drama and reading. *The NAMTA Quarterly. 9(1).* 1-6.

Jones, Sanford. (1984). Dramatic experiences for children. *The NAMTA Quarterly. 9(1),* 30-32.

Lynch, Priscilla. (1987). Foreward. In Hancock, Joele and Hill, Susan, (Eds.). *Literature-based reading programs at work.* Portsmouth, NH: Heinemann.

Miller, Jean. (1989). Personal Correspondence.

Montessori, Maria. (1917). *The advanced Montessori method: The Montessori material.* New York: Schocken Books.

Ripple, R.; Biehler, R.; & Jaquish, G. (1982). *Human development.* Boston: Houghton Mifflin Co.

Stephenson, Margaret. (1986) Language lectures, Ohio Montessori Elementary Teacher Training Course. Cleveland, Ohio.

LANGUAGE ARTS

Watson, Dorothy and Crowley, Paul. (1988). How can we implement a whole-language approach? In Weaver, Constance. *Reading process and practice: From socio-psycholinguistics to whole language.* Portsmouth, NH: Heinemann.

LANGUAGE ARTS

THE MONTESSORI ENVIRONMENT AS A SETTING FOR BILINGUAL EDUCATION

by Alice M. Renton

- ***Bilingual education is of value to both language minority and language majority children.***
- ***The "dual language process" is enhanced by the natural learning of the Montessori prepared environment which builds linguistic experiences through the innate absorbency of the child's mind.***
- ***Language proficiency has two aspects: basic communicative tasks and cognitive academic tasks.***
- ***Language skills in the first language serve as the base for language skills in the second language.***
- ***A trained adult with high proficiency in the first language needs to be available for the minority child.***
- ***Initial reading and writing are taught in the first language.***
- ***Montessori classrooms provide comprehensive input through an array of developmental materials and activities and the three period lesson.***
- ***Montessori provides a supportive environment through small group lessons, emphasis on tracking rather than correcting, overall respect for the child, and the three year cycle.***

The Montessori environment, from preschool through elementary, can be a model setting for a truly bilingual education for both language minority and language majority children. As defined by the U. S. Office of Education, bilingual education is "the use of two languages, one of which is English, as mediums of instruction...for the same student population, in a well-organized program which encompasses part or all of the curriculum, plus study of history and culture associated with the student's mother tongue." By this definition, the purpose of bilingual education is proficient performance in all aspects of two languages — understanding, speaking, writing, and reading — as is common in many countries of the world. In the United States, however, bilingual education programs have given more importance to the learning of English by language minority children than to second language acquisition by English speakers. Current concerns about "the tongue-tied American" and American students' abysmal ignorance of geography and world affairs point to serious deficiencies in second language instruction and cultural awareness. The capacity to function in more than one language and to participate in more than one culture is a vital need for all of today's children.

Ideally, a Montessori model of bilingual education would fully utilize the developing period for language from preschool through elementary, tapping the language potential of both language minority and English-speaking children while keeping in mind the needs of each group. For language minority children, English is essential for survival and success in the dominant culture: they must attain oral proficiency, achieve academically, and develop a comfortable biculturalism. At the same time — and the younger the child, the more critical this is — they have an equally vital need to maintain and develop their first language as an instrument of personal expression, cognitive development, family communication, and cultural identity. For English speakers, early exposure to a second language and culture is a key experience in communication

---

Alice Renton is Academic Director and lecturer in Montessori philosophy for the Rocky Mountain Montessori Teacher Training Program in Boulder, Colorado, and a teacher and certified trainer in bilingual and multicultural preschool curriculum models.

and awareness as well as a strong base for future study. For all young children, the dual language process is an opportunity to expand their minds and lives during a period of optimum language learning. As Eleanor Thomis points out:

> Children who learn two languages as well as use them both, in order to learn other subjects, are engaged in a highly complex process, one which influences their cognitive power, their emotional development, and their personality structure. The challenge to educators of young children lies in the preparation of an educational plan which will guide them safely through the dual language process so that they are competent, knowledgeable, and comfortable in two environments and two languages.

The term "dual language process" seems particularly appropriate to Montessori education. The prepared environment is uniquely suited, in philosophy and practice, to the conditions identified by current research as essential to successful second language acquisition. Montessori has always regarded language as a process of acquisition rather than as the result of direct instruction. It deeply respects the natural absorbency of the child's mind and the guidance of the sensitive periods for movement and order, which not only prepare for the emergence of language but are also intrinsic to it. The sensitive period for language is understood to encompass all of childhood, from birth through age 12, with each development stage focusing on a specific aspect of language.

The term "dual language process" seems particularly appropriate to Montessori education. The prepared environment is uniquely suited, in philosophy and practice, to the conditions identified by current research as essential to successful second language acquisition.

The child's process of acquiring the physical capacity to speak, learning to negotiate meaning, using accepted forms, and eventually mastering all aspects of language, is analyzed by Maria Montessori in *The Absorbent Mind*. She describes it with the same awe expressed by contemporary researchers who admit they still cannot fully understand it. Montessori regarded this process as the child's individual creation, with the adult facilitating the child's own language by providing an environment rich in experiences and language modeling. She stressed language as communicative competency in much the same terms used in today's communication-based approach to both first and second language acquisition.

A bilingual or dual-language Montessori environment, with communicative competency as a goal, can congruently mesh Montessori philosophy and practice with the basic principles of current research on successful communication-based programs. Five principles, outlined below, are grouped into three areas: primary language development, second language acquisition, and student status or classroom interaction.

Primary language development is crucial to the success of language minority children, especially very young ones. It comprises three of the five basic principles below:

1. **To succeed academically, language minority children need to develop proficiency in both languages.** A child's primary language is an essential tool in developing such cognitive skills as understanding, remembering, ordering, classifying, and reasoning. Having acquired these skills, the child can then apply them to second language learning. Ideally, the result is proficient bilingualism (native or near-native level in two languages), the benefits of which are: superior levels of cognitive development, academic achievement, and linguistic awareness. However, if the child begins to learn a second language without first having acquired these essential cognitive skills in the primary language, the result will be limited bilingualism. In this case, the child lacks proficiency in either language and cannot achieve academically.

2. **Language proficiency has two aspects: basic communicative tasks and cognitive academic tasks.** This refers to the two skill levels of every language. Social/conversational language is used on an everyday basis for informal, interpersonal communication and is first acquired in the family. Academic language, either spoken or written, is used for learning and discussing abstract ideas and is acquired in school. Differing amounts of time are required to develop these two aspects of proficiency in a second

language. Current estimates are that it takes two years to develop social language and five to seven years to develop academic language.

3. **Developing primary language skills necessary for academic tasks in the first language is the base for developing academic skills in the second language.** Learning subject matter in the first language builds background knowledge which helps make second language subject matter more comprehensible. This speeds second language acquisition by capitalizing on the cognitive proficiency already established in the first language. Math concepts built in Spanish, for example, will enable a Spanish-speaking child to transfer them to the same subject in English, while at the same time acquiring the appropriate academic language in English. This transfer of skills is very clear in reading development: mastery of the written code only has to happen once. The most efficient way to English literacy is through native language literacy. The child who reads well in Spanish and has good oral language proficiency in English is more likely to begin reading English successfully than the child with few or no reading skills in Spanish and a limited English vocabulary.

These three principles have resulted in the following basic guidelines for successful instruction of language minority children, which can be applied to dual language Montessori settings:

- Language minority children require substantial amounts of instruction in and through their first language — most commonly, 70 percent at the preschool level, 50 percent in grades 1 to 3, and 25 percent in grades 4 to 6. In the Montessori preschool class, this means that all initial presentations of materials are given in the first language. In the elementary class, new subject matter is given in the first language. Less demanding, more familiar subject matter may be introduced in English as appropriate to the child's English proficiency level (this assuming the children have had three years of bilingual preschool experience).
- There is a trained adult available with a high proficiency in the first language. This adult (teacher or aide) gives first language presentations without translation, models the language, provides emotional and psychological support for language minority children, and serves as the first language resource person for the English-speaking adult and children.
- The two languages are kept in separate contexts. Preferably, there are two adults available to serve as separate language models. Presentations are given in one language only, without translation. There is a separate area for each language, with the full complement of Montessori language materials available in a parallel sequence. Equally attractive materials in both languages are available in the reading corner and the listening center.
- Initial reading and writing are taught in the first language. The Montessori language sequence, from beginning oral language development activities through proficient reading, builds native literacy naturally and organically. It gradually brings to consciousness the language already absorbed and develops each skill separately, to be integrated at the child's own pace. The child's own oral language is the basis for sound analysis, word building, and beginning reading.

The fourth principle to be considered from the research applies to all children and clearly defines two outstanding characteristics of the Montessori environment as essential to successful language learning:

4. **The two essential conditions for acquiring communicative competency in a second language are: comprehensible input and a supportive environment.**

Comprehensible Input — Children acquire language by understanding messages. The meaning of the message is embedded in its context — concrete objects, activities, or events taking place in the environment. For the content of the message to be fully understood, the material must be interesting enough for the child to want to understand what it means. It also becomes more meaningful when it triggers the child's imagination and can be explored in interactions with others. Meaning is also derived from delivery of the message. It must build on the child's existing knowledge and include familiar language as well as new. Gesture and facial expression, clear articulation, repetition and simplification, and a reduced rate of speech also transmit meaning. Through meaningful messages given in an understandable manner, children absorb correct grammatical structures, so adult modeling of correct, precise, and complete language is extremely important.

It is clear from this description that the entire design of the Montessori environment is geared to comprehensible input. It provides the richest of contexts through the entire array of developmental materials and activities. Interest in the content comes from individualized presentation and exploration, the intrinsic attraction of the materials, and the many opportunities for interaction among children and between children and adults. The Montessori teacher is solidly trained in conscious delivery and use of language.

A classic Montessori technique, the Three-Period Lesson, is a powerful exercise in comprehensible input — concrete, brief, simple, objective — and an invaluable tool in the dual language process. Through the successive steps of perception, recognition, and expression it builds the three skills of listening, comprehension, and production common to any language. The three periods may be used not only for giving vocabulary for a specific experience, but also as a basis for presenting materials and activities geared to a specific stage of language acquisition. Second-period games, such as "Who has ..." or "Bring me ..." give the practice in recognition essential to comprehension. Third-period activities like "What do you have?" or "What did you bring me?" give opportunties for expression when the child is capable of production.

The Supportive Environment — Comprehensible input is not in itself sufficient for language acquisition to take place. Affective factors enter into play and either impede or facilitate the process, acting as a sort of "affective filter" in the brain. Beneficial affective factors include a non-stressful setting, positive motivation, and self-confidence. These are all present in the Montessori environment and its goal to "teach teaching, not correcting." Again, the entire environment is designed to be wholly supportive of the child's work of learning. Respect for the child's choices, the built-in control of error which frees the child from constant adult correction, and the structuring of materials and activities for maximum independence and success contribute to this atmosphere, as does the self-confidence developed from the daily experiences of respect and responsibility for self, others, and the environment.

The fifth principle from research is directly related to the supportive environment and the relationships established within it:

5. **Positive student outcomes are the result of positive student/teacher and student/student interactions.** This conclusion stresses that teachers must interact positively and equitably with both majority and minority students in specific ways. Examples are listening attentively to them, offering opportunities to respond, giving them individual attention, talking about personal interests and experiences, and using expressions of courtesy with students. Positive student/student interactions result from minority and majority students being involved in cooperative learning techniques where they are working together to reach common goals and rewarded for cooperating with each other. Such interactions promote second language acquisition because a principal factor in this process is intense and frequent contact with fluent second-language-speaking peers. Other positive practices recommended are offering the minority language in second language experiences for majority language children and using it throughout the school for noninstructional purposes to establish its importance. This is seen as part of the care that must be taken to engender feelings of acceptance and equality for all children.

The positive interactions described here are givens in Montessori, since it requires the adult to adapt to the needs of the child and stresses cooperation, not competition. The three-year age range in a class promotes children asking for and receiving help from each other. In the course of the day there are dozens of opportunities for spontaneous pairings and groupings across ages, languages, and cultures. Small group lessons easily lend themselves to second language experiences for all children. The view of the Montessori school as a whole in which every part serves the child supports the integration of the minority language into the entire school environment. Respect for the uniqueness of each child is basic to the Montessori philosophy and brings with it an appreciation of each child's native language and cultural heritage, as well as careful attention to his or her specific language requirements.

LANGUAGE ARTS

It may thus be safely stated that the Montessori educational philosophy, developmental materials, and learning and teaching techniques provide precisely the environment that research indicates is best suited to the dual language approach.

Beginning with preschool, the Montessori model is equipped to offer:

- An environment rich in developmentally appropriate experiences: practical life, sensorial, language, math, art, music, cultural areas, movement.
- High oral proficiency in the first language: conversational interactions, Three-Period Lesson, vocabulary enrichment activities, classified vocabulary, children's literature, group activities on line.
- First language beginning literacy skills: "I Spy" and sound analysis games, sandpaper letters, movable alphabet, reading object boxes, secret messages, three-part cards, sequenced reading materials.
- Intensive oral development in the second language: all oral language activities mentioned under high oral proficiency above; small group lessons in content areas, giving second language vocabulary for concepts already established in first language; balanced use of both languages for line activities, grace and courtesy, and non-instructional purposes.
- Readiness for second language literacy: "I Spy," news period, question games, sandpaper letters, story-telling.
- A multicultural focus: integration through practical life, sensorial, math, cultural areas, arts and crafts, music, food preparation activities, holidays, and celebrations.

A special strength of the Montessori dual language approach is that the three-year cycle provides ample time for thorough second language acquisition. Monolingual children beginning the dual language process at age three are taking the first step towards becoming bilingual, a developmental process which continues throughout elementary school. During each of the three cycles, they will progress at their own pace and capacity in each language, at both the social and the academic levels. By approaching this process as a whole and using each level of the prepared environment to its best advantage, Montessorians can empower all children to more fully realize their human potential for language.

IMPLEMENTATION

MONTESSORI TRAINING

THE CURRICULUM MESH

SUPERVISION AND ORGANIZATION

INDIVIDUALIZED INSTRUCTION

MULTI-AGE GROUPINGS

OBSERVATION AND RECORD KEEPING

PREPARED ENVIRONMENT

CONFERENCES AND WORK DIARIES

NORMALIZATION

WRITTEN REPORTS TO PARENTS

Becoming a Montessori school is not an event; it is a gradual restructuring of the school's total approach to education. Because it is a comprehensive program, a step-by-step process must be anticipated, taking into account physical, administrative, psychological, and pedagogical components. This chapter outlines a number of implementation approaches to help school district personnel and proposal writers identify the requirements of Montessori educational design and implementation.

TRAINING

IMPLEMENTATION

MONTESSORI TRAINING

Montessori training in the United States has been in process since 1960. Even though a majority of public schools require the credentials of the American Montessori Society or the Association Montessori Internationale, there are an increasing number of training associations, approximately twenty-five, with different formats, standards, and contents. The Montessori name is generic. When restricted use of the term "Montessori" was sought in 1967, the U.S. Patent and Trademark Trial and Appeal Board refused.

Every district will need to research the various Montessori training methods available as it selects its training process because each training association has its own way of defining Montessori. Some associations have no pedagogical control at all.

FORMATION – NOT JUST INFORMATION

When Montessori is being considered as a program option, the prevailing question is methodological: How is it implemented? The general assumption is that Montessori training is information about the program's materials, key features, and approaches so that the trainees will be able to correctly implement Montessori in the classroom. The next assumption then follows: Montessori training can be conveyed in increments – the trainee is introduced to a limited number of components in convenient study units. *The reality is, however, that Montessori training must deal with change in the adult. In fact, the most important aspect of Montessori training is formation of the teacher.*

Formation implies that a pedagogical system has more than technique. Since Montessori is a philosophical, psychological, and even spiritual movement in its fullest dimension, the process goes beyond a "component" checklist. As an educational reform concept involving human development issues, moral learning, and personal self-esteem of the learner, the Montessori training must bring about a new operating perspective which is clear, child-centered, and responsive to the changing needs of an open classroom. In contemporary terms, Montessori training must deal with fundamental, teacher-held beliefs as they pertain to childrearing and education. Research has shown that dynamic teaching involves perceptions and personal meanings rooted in the teacher's beliefs about self, the child's personality, the human task, and making sense of the world.

THE IMPORTANCE OF EXTENDED PRESERVICE

Changing teachers' views of their roles in the classroom is seldom accomplished by a "lay on" program where new learning objectives are compared to old, where objectives are projected into teacher planning, and evaluation then proves whether the plan works. Teachers need a shared reference point about education. Training bonds the teacher to a mission of understanding the child, respecting the child, believing in the progress of the human personality, and discovering the universals of nature and civilization. These philosophical principles are instilled concretely through the "unfolding drama of the Montessori materials" integrated with theory, psychology, and philosophy, strategically introduced so that the teacher anticipates what each material means to the whole. In order to have a sense of the whole – an emerging overview where the details of training are connected to an idea structure – the trainee will need focused attention over a sustained period of study prior to going into the classroom.

Preservice training ensures that the Montessori teacher operates with two overviews: 1) the totality of developmental needs of the child in the context of education, and 2) the scope and sequence of the Montessori materials. In the classroom an effective Montessori teacher performs the art of the match – the needs of the child and the activities provided by the environment. To achieve these overviews and make them effective requires an intensive period of time because:

- Extended preservice creates a community response where groups of trainees build understanding and practice around a defined set of Montessori ideas and materials.
- Extended preservice allows for personal assimilation of the curriculum scope, sequence and interconnectedness unique to Montessori.
- Constant practice, insight, lecture programming, and writing bring to the trainees a heightened sense of discipline and commitment as they delve deeper into structure and working knowledge of the Montessori philosophy and its relevance to the child.
- Through the order and philosophical coherence of the materials presented all at once in preservice, a new constellation of ideas imparts to the trainee a sense of educational responsibility to maintain the unique characteristics of Montessori.

COURSE CONTENT AND SCHEDULE

The content of the preservice training is substantial: 1) the materials have basic uses and variations which must be presented (not talked through), 2) presentations must be practiced and assimilated, and 3) theory and methodology must be integrated with the materials.

The Association Montessori Internationale observes the following preservice requirements:

Preschool

Three hundred lecture hours in Montessori theory and practice, practical life, sensorial, language and language extensions, mathematics, geography, history, biology, art and handicrafts, and music.

One hundred hours of supervised practice with the materials is also required.

Elementary

Three hundred lecture hours in Montessori theory, biology, geography, geometry, history, language, mathematics, music, including parent relations, parent education, and professional development.

One hundred lecture hours for a Montessori preparatory course about the preschool curriculum in the event that the trainee does not have a preschool diploma.

One hundred fifty hours of supervised practice with the materials is also required.

Each course requires a minimum of 90 hours of supervised observation of an AMI certified Montessori class and a minimum 120 hours of practice teaching in two different AMI classroom sites other than the teacher's classroom.

COURSE COMPONENTS AND RATIONALES

Montessori courses vary; the descriptive standards put forth here are generally those maintained by the Association Montessori Internationale.

Lectures

Lectures pertaining to theory and methodology are given by certified trainers or lecturers who have participated in a regulated Training of Trainers program. About ten percent of the elementary course is theory which orients the trainee to developmental psychology, philosophy,

IMPLEMENTATION

and world view. Lectures presented are documented in writing and reviewed for consistency and timing by the Association Montessori Internationale.

Albums

Training albums are summaries of the material presentations written by the trainee. Writing the album enables the trainee to: 1) internalize the sequence through writing, 2) focus attention on the material passages, and 3) see the material presentation as a living, demonstrated craft and not a recipe to be read from a pre-printed manual. Following training, the albums serve as reference books that advise the teacher of the rich curriculum variations and applications basic to each material. Three-fourths of 122 AMI graduates surveyed in 1984 felt the album writing helped them learn the materials in a highly personalized manner.

Practicals

Practicals refers to "hands on" experience with materials presented in lectures. For every three hours of methodology lectures, one hour of supervised practice with the materials must be completed by the trainee.

Observation

Teachers keep a timed diary of various observational tasks which are fundamental to learning about the child, the Montessori classroom, and basic Montessori techniques. The observation requirement consists of a minimum three full weeks, morning and afternoon, in a certified AMI Montessori classroom.

Practice Teaching

Trainees give lessons to children under the direction of certified AMI teachers. Visiting trainer personnel make two hour visits, consulting with the trainee and the cooperating teacher regarding ways to improve the trainee's classroom approach. In order to see good models for Montessori practice, it is required that trainees both observe and practice-teach outside their own classroom.

Examinations

A total of six hours of written examinations — three hours on theory and three hours on methodology — are required along with about two hours of oral examinations. The oral examiners are external to the course. Trainers from other centers examine, thereby assuring that the same high standards and objective evaluation are maintained at every institute.

COURSE FORMATS

Two course options are available: summer training and academic year training.

Academic Year Training — Preschool and Elementary

Academic year training is the traditional model which includes a practice teaching and observation component as part of the academic year. The intensity of the course sequence, the possibilities for close community, the additional assimilation time, and the more relaxed style of input are all advantages of academic year training. Public schools usually allow a sabbatical year for teachers interested in the nine month training.

IMPLEMENTATION

Summer Training

Summer training allows teachers to continue their work during the year without uprooting the family for a nine month period. Here are two examples of summer training programs being piloted by AMI and which are under evaluation:

SUMMER PREPARATORY COURSE
FOLLOWED BY TWO-SUMMER ELEMENTARY COURSE

Preparatory Course — First summer eight weeks including some elementary curriculum

Elementary 1 — Eight weeks second summer
Observation — Three weeks during the following academic year
Weekend Seminar — Review of observation experience during spring of that academic year
Elementary 2 — Nine weeks third summer includes written examinations
Practice Teaching — Four weeks during the following academic year
Weekend Seminar — Review in preparation for oral exams
Preparation for Oral Examinations — One week review
Oral Examinations

TWO-SUMMER PRESCHOOL COURSE

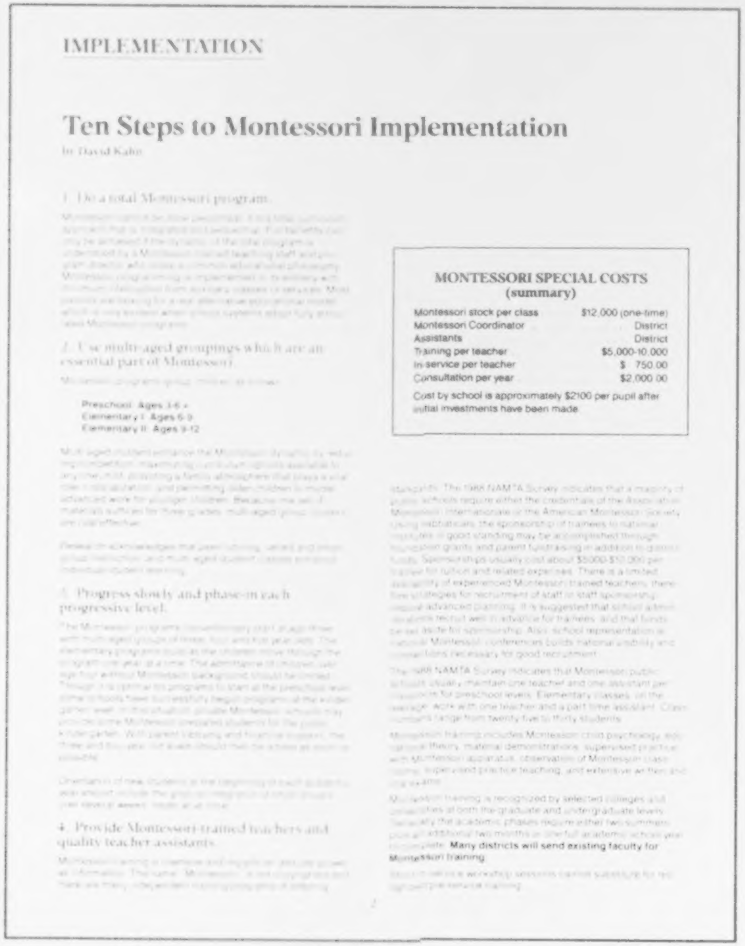
Summer 1 — Nine weeks first summer
Observation — Three weeks during the following academic year
Weekend Seminar — Review of observation experience during spring of academic year
Summer 2 — Nine weeks second summer includes written examinations
Practice Teaching — Four weeks during the following academic year
Weekend Seminar — Review in preparation for oral exams
Preparation for Oral Examinations — One week review

Although summer training formats require a longer time for full Montessori certification, many teachers begin teaching after their first summer of primary or elementary training. During the academic year after the first elementary summer, a total of three weeks must be spent observing two different AMI Montessori classes. During the academic year after the second elementary summer a total of four weeks must be spent practice teaching in two different AMI Montessori classes.

David Kahn

Appendix 1: "Ten Steps to Montessori Implementation," excerpted from *Montessori Public School Consortium Report*

An executive summary statement of implementation costs and procedures provides an overview. The general cost for Montessori apparatus is about $15,000 to $20,000, depending on degree of completion.



IMPLEMENTATION

Ten Steps to Montessori Implementation

by David Kahn

1. Do a total Montessori program.

Montessori cannot be done piecemeal; it is a total curriculum approach that is integrated and sequential. Full benefits can only be achieved if the dynamic of the total program is understood by a Montessori-trained teaching staff and program director who share a common educational philosophy. Montessori programming is implemented in its entirety with minimum interruption from auxiliary classes or services. Most parents are looking for a real alternative educational model which is only evident when school systems adopt fully accredited Montessori programs.

2. Use multi-aged groupings which are an essential part of Montessori.

Montessori programs group children as follows:

Preschool: Ages 3-6+
Elementary I: Ages 6-9
Elementary II: Ages 9-12

3. Progress slowly and phase-in each progressive level.

4. Provide Montessori-trained teachers and quality teacher assistants.

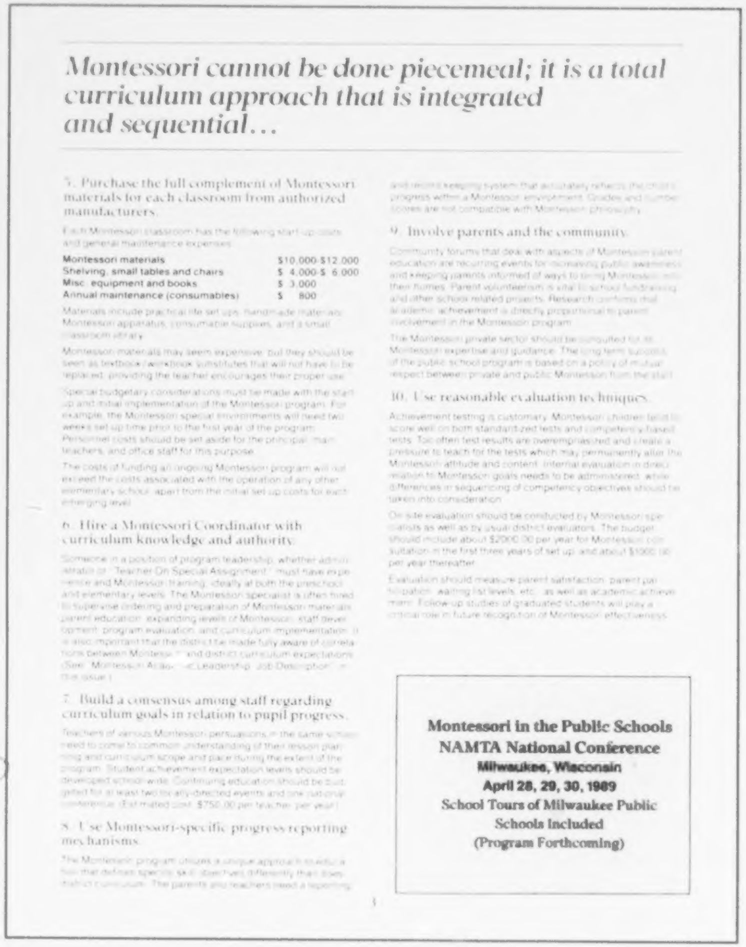
MONTESSORI SPECIAL COSTS
(summary)

Montessori stock per class	$12,000 (one-time)
Montessori Coordinator	District
Assistants	District
Training per teacher	$5,000-10,000
In-service per teacher	$ 750.00
Consultation per year	$2,000.00

Cost by school is approximately $2100 per pupil after initial investments have been made.

Many districts will send existing faculty for Montessori training.

2



Montessori cannot be done piecemeal; it is a total curriculum approach that is integrated and sequential…

5. Purchase the full complement of Montessori materials for each classroom from authorized manufacturers.

Each Montessori classroom has the following start-up costs and general maintenance expenses:

Montessori materials	$10,000-$12,000
Shelving, small tables and chairs	$ 4,000-$ 6,000
Misc. equipment and books	$ 3,000
Annual maintenance (consumables)	$ 800

Materials include practical life set ups, handmade materials, Montessori apparatus, consumable supplies, and a small classroom library.

Montessori materials may seem expensive, but they should be seen as textbook/workbook substitutes that will not have to be replaced, providing the teacher encourages their proper use.

Special budgetary considerations must be made with the start up and initial implementation of the Montessori program. For example, the Montessori special environments will need two weeks set up time prior to the first year of the program. Personnel costs should be set aside for the principal, main teachers, and office staff for this purpose.

The costs of funding an ongoing Montessori program will not exceed the costs associated with the operation of any other elementary school, apart from the initial set up costs for each emerging level.

6. Hire a Montessori Coordinator with curriculum knowledge and authority.

Someone in a position of program leadership, whether administrator or "Teacher On Special Assignment," must have experience and Montessori training, ideally at both the preschool and elementary levels. The Montessori specialist is often hired to supervise ordering and preparation of Montessori materials, parent education, expanding levels of Montessori, staff development, program evaluation, and curriculum implementation. It is also important that the district be made fully aware of correlations between Montessori and district curriculum expectations. (See "Montessori Academic Leadership: Job Description" in this issue.)

7. Build a consensus among staff regarding curriculum goals in relation to pupil progress.

Teachers of various Montessori persuasions in the same school need to come to common understanding of their lesson planning and curriculum scope and pace during the extent of the program. Student achievement expectation levels should be developed school-wide. Continuing education should be budgeted for at least two locally-directed events and one national conference. (Estimated cost: $750.00 per teacher per year.)

8. Use Montessori-specific progress reporting mechanisms.

The Montessori program utilizes a unique approach to education that defines specific skill objectives differently than does district curriculum. The parents and teachers need a reporting and record keeping system that accurately reflects the child's progress within a Montessori environment. Grades and number scores are not compatible with Montessori philosophy.

9. Involve parents and the community.

Community forums that deal with aspects of Montessori parent education are recurring events for increasing public awareness and keeping parents informed of ways to bring Montessori into their homes. Parent volunteerism is vital to school fundraising and other school related projects. Research confirms that academic achievement is directly proportional to parent involvement in the Montessori program.

The Montessori private sector should be consulted for its Montessori expertise and guidance. The long term success of the public school program is based on a policy of mutual respect between private and public Montessori from the start.

10. Use reasonable evaluation techniques.

Achievement testing is customary. Montessori children tend to score well on both standardized tests and competency-based tests. Too often test results are overemphasized and create a pressure to teach for the tests which may permanently alter the Montessori attitude and content. Internal evaluation in direct relation to Montessori goals needs to be administered, while differences in sequencing of competency objectives should be taken into consideration.

On site evaluation should be conducted by Montessori specialists as well as by usual district evaluators. The budget should include about $2000.00 per year for Montessori consultation in the first three years of set up, and about $1000.00 per year thereafter.

Evaluation should measure parent satisfaction, parent participation, waiting list levels, etc., as well as academic achievement. Follow-up studies of graduated students will play a critical role in future recognition of Montessori effectiveness.

Montessori in the Public Schools
NAMTA National Conference
Milwaukee, Wisconsin
April 28, 29, 30, 1989
School Tours of Milwaukee Public Schools Included
(Program Forthcoming)

3

Appendix 2: "A Study of College and University Accredited Montessori Teacher Training Programs," by Mary Maher Boehnlein

This compendium of available training programs was published (Summer, 1984) in the NAMTA Journal. *Although this study is obsolete, the number of college and university accredited Montessori teacher training programs presented as options offers ways of developing training formats. Montessori tuition fees in 1990 range from $4000-$5000.*

A Study of College/University Accredited Montessori Teacher Training Programs

by Mary Maher Boehnlein Ph.D.

Introduction

Teacher training studies are not new. Smith et al (1980, pg. 1) notes that one of the first was published in 1929 and still stands as "the only comprehensive and objective effort to provide a functional basis for pedagogical education." Other studies followed in 1933 by the U.S. Office of Education, 1963 by Conant, 1961 by the National Education Association, 1958 and 1969 by the American Association of Colleges for Teacher Education, 1972 by Rosner, 1976 by Howsam, and 1977 by Ream. Just recently numerous proposals have been published which attempt to provide blueprints for teacher education: the Paideia Proposal (Adler, 1982) and the National Commission of Excellence in Education Report (1983).

These studies sought to provide information about what teachers do, hence what they need to know, how they were trained, and how they should be trained. Smith notes that teacher training is entangled in a network of Federal, state, and local agencies and private and professional groups. Still, it is the political and social forces which are given voice by these groups and agencies thus making education responsible to its consumers, the public.

Historically in the United States teacher training was conducted in Normal Schools whose sole purpose was to train teachers. As secondary education became universal in the United States and society became less agriculturally based and increasingly industrialized and technological, more was demanded of schools and ultimately more education required of teachers. In response to this Normal Schools began to include more liberal arts courses and eventually to become four year colleges or part of a university.

In Europe, however, teacher training has remained as post-secondary, independent of a university degree and in terms of American Montessori teacher training, has caused difficulties for the European model of independent Montessori teacher training institutions was transplanted to the United States in the early 1960's amid much internal controversy of the AMI (Association Montessori Internationale) affiliated American Montessori Society. Applebaum (1971) documented in her dissertation the many discussions between AMI & AMS about how Montessori training should be implemented in the United States. Of major concern to the American Montessori advocates was that Montessori teachers be as knowledgeable, if not more knowledgeable, than traditionally trained teachers. To this end, they wished to require that students possess a Bachelor's degree before entering Montessori training and that training be approved by a strong and recognized Montessori accrediting body to insure excellence. When unable to agree on how to effect the above standards, and to agree on other curriculum issues, the result was independent Montessori training separated from and out of the mainstream of the traditional educational system in the United States.

At first, the establishment of independent training programs was not of major concern since most of the programs were for preschool state certification or a college degree was not required in many of the states for this level of teaching. With the increasing number of Montessori elementary classrooms, however, the lack of both state certification as well as Montessori trained teachers has threatened to impede the growth of both public and private Montessori schools in the United States.

Montessori administrators and boards of trustees are aware that parents need to have their children in state chartered elementary schools as required by law. State chartering requires that teachers at least possess a college degree and that they receive state teaching certification.

Increasingly, prospective Montessori trainees are interested in receiving college credit for their Montessori training. Among these are the many public school teachers whose systems have implemented Montessori or quasi-Montessori programs. These teachers wish to obtain bona fide Montessori training in order to implement the full Montessori curriculum and also need recognized credit in order to obtain salary increments and/or advanced degrees.

Purpose of the study

Can Montessori elementary training gain university/college credit and state teachers' certification and still maintain the known integrity and high standards of excellence of their programs? Can Montessori training programs be integrated into college and university course offerings? These two questions formed the basis for a study of current Montessori training programs to determine the feasibility of proposing a joint university/Montessori AMI elementary teacher training program. The study reported here was part of a larger project which studied Montessori teacher training needs in the United States. The study was funded by Cleveland State University, the Cleveland Foundation, and the Ruffing Montessori School of Cleveland.

The university portion of the study sought to answer eight questions:

1. Which Montessori training courses have been accredited by institutions of higher learning?
2. What was the process by which the courses were approved by the institutions?
3. What level of credit is granted i.e., undergraduate, postgraduate, or graduate?
4. How many credits are given and how are these credits distributed in the areas of:
   a. theoretical foundations of education (philosophy, history of education, psychology)
   b. pedagogical methods and materials (instructional development and curriculum theory)
   c. practice teaching or field based experiences with children in actual classrooms before granting of a diploma
5. Do Montessori courses meet, fail to meet, or exceed the accrediting institutions' academic standards of excellence?
6. Did Montessori faculty encounter opposition to the training courses from the accrediting institution's faculty and if so, how was it resolved?
7. What are the staffing patterns of the courses?
8. What are the financial and budgetary arrangements between the training courses and the accrediting institutions?

In addition to these questions, the study sought to determine which institutions have granted transfer credit to independent Montessori training courses and if any of the states recognized independent Montessori training courses for certification purposes?

Methods

All Montessori elementary teacher training programs affiliated with the Association Montessori Internationale and the American Montessori Society were identified through information directories of these organizations. Five preschool programs which has been in operation at the college level for nearly twenty years were also included to garner additional information from their many years of experience.

Brochures and other promotional or descriptive materials from the courses were examined. A questionnaire was developed as the basic outline for a phone interview to be conducted with the elementary training program directors. The interview was tested and then revised. Then, program directors were contacted and interviewed if they were willing. When the interviewer was unable to reach a director after three attempts, the program was eliminated from the sample.

Data from the questionnaires was summarized (see Table 1) and compared to similar data collected for AMS by Turner (1983) on preprimary training programs and to a list of colleges and universities which had given credit for AMI preprimary training compiled by the Atlanta Montessori Institute (see Table 2).

Each of the United States certification officers in the states and territories was asked for their certification requirements and to indicate if they recognized independent Montessori training courses for state teacher certification requirements.

Results

Fifty four (54) institutions were identified as granting credit for Montessori training courses: 24 for AMI courses and 30 for AMS courses. Of these, eleven (11) were elementary teacher training programs operating in the United States. Of the eleven training programs, seven (7) offered college or university credit simultaneously with the Montessori training. All seven programs were contacted but only four (4) participated in the interview process. No trainer refused to participate in the study when contacted but three were unable to be reached or did not return phone messages because they were teaching during the day or were doing field observations of student teachers.

In addition to the four elementary programs, four preprimary programs with university or college affiliation were included in the data. These were chosen because of their long affiliation with colleges. One additional elementary program was chosen because students had received transfer or independent study credit for their course. While the total sample is small it is considered representative geographically and in terms of years of existence. Both public and private universities or colleges are represented, also.

Only one AMI program was directly connected to a university or college, the preprimary program at Avila College in Kansas City, Missouri. Another AMI course had been affiliated with a college, Edgecliff, but chose to change to independent status. Seven out of ten AMS elementary programs are affiliated with colleges or universities. That is, the Montessori courses are printed in the institution's catalogues (often necessary for credit to be transferred between schools) and their faculty in two cases are eligible for tenure or have tenure at the institution. The rest are considered adjunct faculty, only, and their programs operated as independent training institutions with the option for the student to pay extra fees to register simultaneously in the Montessori courses and to obtain college or university credit towards a degree.

Maximum credit granted was equivalent to a full academic year of study or about 36 quarter hours or 24 semester hours. In nearly 98% of the cases, the Montessori training is granted both undergraduate or graduate credit, whichever the student prefers.

Undergraduate credit, however was possible only if the student was currently enrolled at a university or college and actively seeking a degree, usually in teacher education. The credits were applied to a student's program in a variety of ways. Some colleges accepted it only as elective credit while others such as Xavier University and Seattle University consider the Montessori courses as equivalent to traditional early childhood or elementary methods courses, with some slight exceptions as discussed later in this report. One factor which seemed to determine if Montessori courses could substitute for traditional courses was the faculty status of the Montessori program director. In the two schools mentioned above, the director's hold Ph.D's or their equivalent and are part of the tenured faculty. Additionally, the Montessori program at Xavier originally was offered in the Psychology department but now is in the Department of Education and the Graduate School, thus coming in the back door, so to speak.

Of the nine programs included in this study, six offered state certification and the remaining three felt they would qualify if their states offered a preschool certificate. Students wishing to obtain state certification in addition to the Montessori diploma, are required to take specified traditional methods courses amounting to between 11 to 30 semester hours of credit. In every instance, students were required to take the traditional mathematics methods course and the traditional reading/language arts methods course. The majority were also required to take a traditional student teaching experience but where there had been a Montessori internship the required traditional student teaching hours were reduced by 50%.

In Montessori training programs the course is considered as an integrated entity and not divided into traditional courses by credit hour. When aligned with a university or college, the distribution of credits of the Montessori program showed great variety but in general the courses titles included:

1. philosophy/psychology/child development	3-6 semester hours
2. curriculum methods and materials including practice with materials	3-12 semester hours
3. observations and supervised practice teaching	6-18 semester hours

The process of approval of the Montessori courses and programs was exactly the same at every institution and followed the usual collegial pattern of submitting the course descriptions and program to a departmental faculty curriculum committee who then recommended approval to the departmental faculty who in turn recommended approval to the appropriate dean. All of the AMS trainers reported that they used the approved collegial format for writing the program description but found that the report done to obtain approval from the Accreditation Council for Childhood Education Specialist Schools (ACCESS) was also acceptable because of its thoroughness.

Trainers were very complimentary concerning the cooperation and support received from the colleges and universities and none reported any interference with course content or staffing. All institutions recognized Montessori trainers as having equivalent to at least a Master's level and often considered this as a terminal degree in the Montessori field thus allowing them to teach graduate courses. Trainers on tenure tracks at universities did possess a doctorate or a master's degree. Part time lecturers, however, could possess only a bachelor's degree plus the Montessori training and were hired as guest lecturers rather than adjunct faculty.

Staffing patterns of the courses followed a pattern of bringing in guest lecturers at the beginning of the program with full time staff gradually assuming responsibility for teaching all of the curriculum methods. Some training centers with laboratory schools on site, utilized the school staff as part time lecturers, also. Specialists most often brought in were music and art.

Maintenance of the university or college academic standards presented no problem. The interviews revealed that the Montessori training was perceived as equal to and in most cases, more stringent and demanding of excellence than the traditional programs. Trainers stated that when their first students moved into the traditional teacher education courses the students' performance was so superior that professors became more interested in the Montessori training and asked to observe and discuss it with the trainers. Additionally, excellence was assured by the sheer number of class hours which in most cases far exceed the amount required for the college credit granted and by the lengthy oral and written examinations.

Only in three cases did trainers report opposition to the Montessori programs by university or college faculty. In one case this was because the college was under severe financial strain and eventually closed. The Montessori program was unable to cut their budget and thus was perceived as a drain on resources. In the other two cases, traditional faculty were concerned that the Montessori program would attract students from the traditional programs and cause enrollment to decline. When the opposite occurred (students usually wished to complete their degree and thus enrolled in the traditional courses as well) opposition ceased. With the recent decline in enrollment in teacher training programs, trainers report colleges and universities are more hospitable and have invited the Montessori courses to become a part of the college in order to boost college enrollment. Other opposition in the form of myths and misunderstandings still printed in traditional textbooks or orally conveyed to students by unknowledgeable professors has been dispelled by the presence of a Montessori expert on the faculty and has resulted in mutual understanding and respect between the traditional and Montessori training programs.

An interesting aspect of university accreditation of Montessori training is that several centers reported that their courses were being granted transfer credit to a number of different universities or colleges. (See Table 2). Portland, Oregon for example has been approved by both Portland University and Marylhurst College and the Cincinnati students were able to use their course work for credit at Edgecliff College or University of Cincinnati. This arrangement allows a program to remain independent of a college or university yet still have their courses be accepted as if the program were an accredited teacher training program.

State Certification Requirements

The survey of certification requirements of the states and territories brought response from all but Arkansas, District of Columbia, Oregon, Puerto Rico, and South Carolina at the time of writing this report. All officers replied that if Montessori training courses were recognized by a university or college teacher training division then the state also would accept them through the college or university transcript. No state would recognize Montessori elementary training independently of a teacher training institution. Some states, however, do recognize the Montessori preschool training programs.

Programs of Study

Sample programs of study from Seattle University, Oklahoma University, Portland University, and Xavier University were examined. All of the Master's level programs required a common core of all candidates which included one course each in history or

social issues of education, research or statistics, philosophy of education, and one other foundations of education or curriculum course. Montessori courses, then comprised three fourths of the student's specialization.

Both Seattle and Xavier had alternative program sequences for persons who held a bachelor's degree and who wished to obtain both a state elementary teaching credential and the Montessori preschool or elementary diploma. Seattle also had a Bachelor's of Education in Early Childhood in which the Montessori courses substituted for traditional education requirements. Xavier has designed programs for persons wishing to convert an Ohio kindergarten primary certificate to a state elementary certificate and also obtain the Montessori elementary diploma simultaneously. The state allows them to do this within the Master's program which is highly unusual. All students seeking certification by converting a liberal arts or Bachelor of Science degree, however, must have completed the necessary general education requirements at the undergraduate level. That is, these courses must be taken in addition to the Master's program and are universally required of all teachers in the state.

Conclusions

Even with the limited sample of programs interviewed it is evident that Montessori training courses have arrived at clear agreements with universities or colleges which allow students to obtain credit and allow the training program to maintain its integrity and standards. It also was evident that colleges and universities are more flexible than they were twenty years ago in accepting Montessori training programs for credit and that they respect the Montessori trainer's education and experience.

Based on our interviews, it appears that the Montessori programs which are integral with university or college programs have been well accepted and have helped Montessori education move into the mainstream of the profession. While none of the programs reported doing any follow up study of the graduates, all agreed this should be done to be able to provide evidence that the training is of high quality and of practical value. This, then, would help new training programs present objective evidence to colleges and universities of the value of offering Montessori training as an option of an elective area to the traditional teacher training.

The longer program had been in existence at a university or college, the easier it was to add the elementary training to the preprimary program. Also less budget crises were reported by programs that were supported and subsidized by universities or colleges. Benefits that accrue from being part of an accredited college of university or college include:

1. students can earn credit towards a degree.
2. students may be able to obtain state teachers' certification simultaneously with the Montessori diploma.
3. students can qualify for financial aid and veterans' benefits to subsidize the cost of their education.
4. students are able to utilize the full resources of the college or university which often exceed those of the independent training program, particularly libraries, resource centers for material making, and gymnasiums.
5. the training program may be more stable financially and thus be able to exist for longer periods of time.
6. the training program can obtain greater public exposure and have wider influence.

It appears from this study that Montessori elementary training can be structured so that students can obtain both the Montessori diploma and state teachers' certification and still maintain the integrity of their program.

Table I
University Study Report
Montessori Teacher Training Project

I. Identifying Data

	Training Center	Affiliation	Program	Mont. Tuition	College Tuition	Interns	Extra Fees: Exam	Extra Fees: Materials
1.	Montessori Ed. Center of Dayton	AMI	1-6	$1,100.00	[illegible]	[illegible]	[illegible]	[illegible]
2.	[illegible]	AMI	1-6	[illegible]	[illegible]	[illegible]	$100	[illegible]
3.	[illegible]	AMI	1-6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
4.	[illegible] Training Center	AMS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
5.	Montessori [illegible]	AMS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
6.	Montessori [illegible] Training Program	AMS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
7.	[illegible]	AMS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8.	[illegible]	AMS	1-6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
9.	[illegible]	AMS	1-6	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

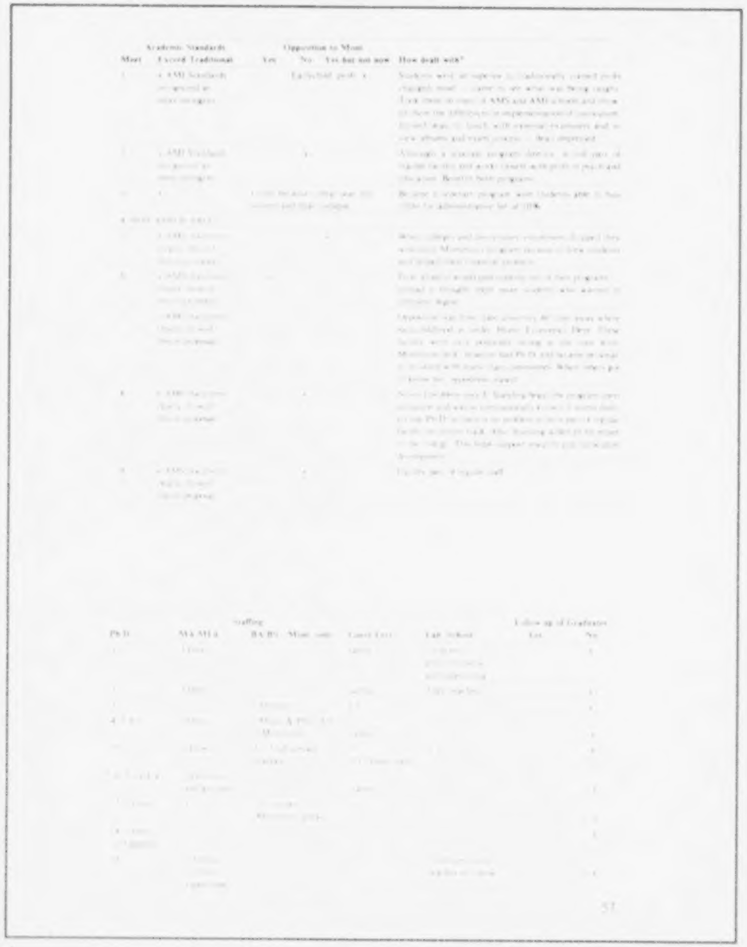
Credit granted by: Institution	Proposed**	Other	Process***	Credit Structure: Non-degree	Bach.	Post Bac.	Master's	Elective credit	Major
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

State Certification	Need Additional Courses: course	hrs.	Credit for Montessori Work: Philosophy	Methods	Practice & Material Construction	Obs.	Interns.
1. no (none avail.)	Learning Theory History of Education Research Techniques Communication/Psych. Statistics Electives	3 3 3 3 3 6	6	12	(integrated)		(integrated)
2. yes	yes - traditional program		[illegible]				
3. none avail. only elem. or K-1	yes - traditional elem. early childhood Elem. Sch. Methods I Elem. Sch. Methods II Foundations of Ed. Reading Methods Music Art Student Teaching Children's Literature Physical Ed.	 4 4 3 3 4 [illegible] [illegible] [illegible]	[illegible]				
4. none avail.	no		[illegible]				
5. yes	yes - traditional elem.		[illegible] semester hours for MA				
6. yes	yes - traditional elem.		[illegible]				
7. yes	[illegible]		[illegible]				
8. yes	yes Reading Methods Math Methods Student Teaching [illegible] General Methods History of Philos. [illegible]	[illegible]	[illegible]		(integrated)		[illegible]
9. yes	yes Reading Methods New Math Methods Phys. Ed. Methods Children's Literature At Graduate level: Philosophy of Ed. & Montessori [illegible] Ed. Administration Educational Research (paper done in Mont.)	[illegible]	[illegible]				

176

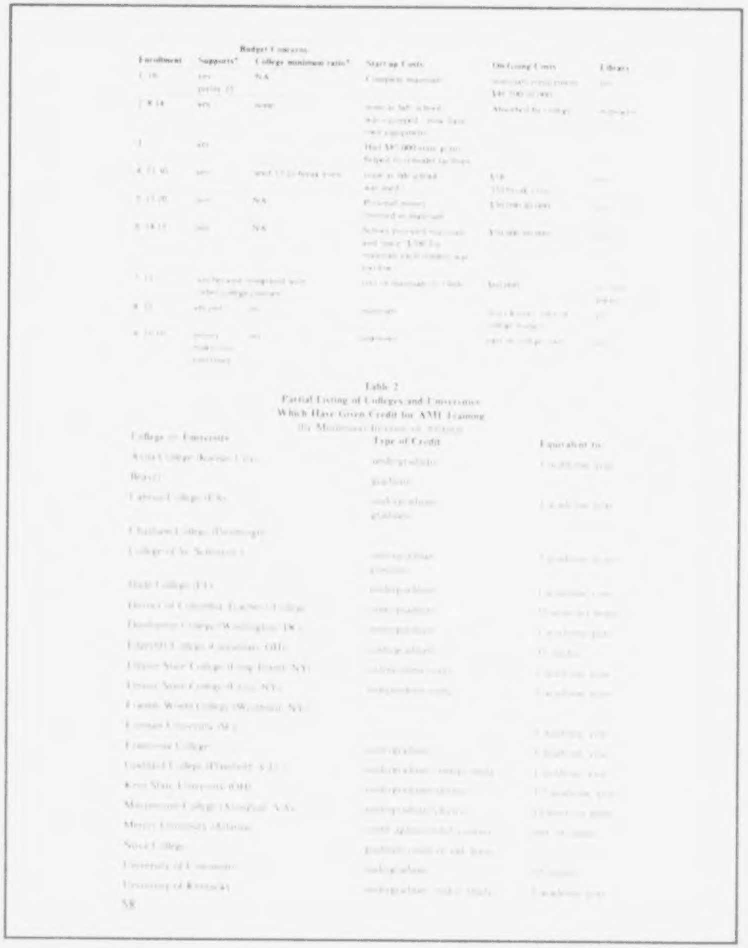
177



Academic Standards		Opposition to Mont.			
Meet	Exceed Traditional	Yes	No	Yes but not now	How dealt with?
1.	x AMI Standards compared to other programs				[illegible]
2.	x AMI Standards compared to other programs		x		[illegible]

Staffing						Follow up of Graduates	
Ph.D.	MA/MEd	BA/BS	Mont. only	Cons't Crit	Lab School	Yes	No

57



Budget Concerns					
Enrollment	Supports?	College minimum ratio?	Start up Costs	On Going Costs	Library
1. 16	yes	N/A	Complete materials	[illegible]	[illegible]
2. 8-14	yes	none	[illegible]	Absorbed by college	[illegible]

Table 2
Partial Listing of Colleges and Universities Which Have Given Credit for AMI Training
(By Montessori Director of Training)

College or University	Type of Credit	Equivalent to:
Avila College (Kansas City)	undergraduate	[illegible]
[illegible]	graduate	
[illegible]	undergraduate graduate	[illegible]
Chatham College (Pittsburgh)		
[illegible]	undergraduate graduate	[illegible]
[illegible]	undergraduate	[illegible]
District of Columbia Teachers College	[illegible]	[illegible]
[illegible] College (Washington, DC)	[illegible]	[illegible]
[illegible] College (Cincinnati, OH)	undergraduate	[illegible]
[illegible] State College ([illegible], NY)	[illegible]	[illegible]
[illegible] State College ([illegible], NY)	[illegible]	[illegible]
[illegible] College ([illegible], NY)		
[illegible] University (NY)		[illegible]
[illegible] College	[illegible]	[illegible]
[illegible] College ([illegible])	[illegible]	[illegible]
Kent State University (OH)	[illegible]	[illegible]
Marymount College ([illegible], NY)	[illegible]	[illegible]
[illegible] University ([illegible])	[illegible]	[illegible]
[illegible] College	[illegible]	
University of Cincinnati	undergraduate	[illegible]
University of Kentucky	undergraduate	[illegible]

58

University of Maine	undergraduate: indep. study	1 academic year
University of Northern Colorado	graduate	12 s.c. towards mas
Villanova (PA)	undergraduate	1 academic year

The State Boards of Education, Non-Public Schools Division of the following states have recognized the value of the AMI Primary Course for the preparation of Montessori teachers working at the early childhood level:

*Colorado

Pennsylvania accepts 12 credit hours towards teacher certification

*Louisiana

Maryland accepts AMI training as a valid teaching credential

Minnesota accepts AMI training as a valid teaching credential

*New Mexico

*Complete information not available

REFERENCES

Adler, Mortimer. "The Reform of Public Schools." *The Center Magazine* (Sept/Oct 1983), 12-33.

Appelbaum, Phyllis. *The Growth of the Montessori Movement in the United States 1909-1970.* Unpublished doctoral dissertation. New York University, 1971.

Charters, W.W., and D. Waples. *Commonwealth Teacher Training Study.* Chicago: University of Chicago Press, 1929.

Commission on Teacher Education. *Teachers for Our Times.* American Council on Education, 1944.

Commission on Teacher Education. *The Improvement of Teacher Education.* American Council on Education, 1946.

Conant, James B., *The Education of American Teachers.* New York: McGraw Hill Book Company, 1963.

Cottrell, D.P. (ed.). *Teacher Education for A Free People.* Washington: The American Association of Colleges for Teacher Education, 1956.

Howsam, Robert B., D. Corrigan, G. Denemark, and R. Nash. *Educating A Profession.* Washington: American Association of Colleges for Teacher Education, 1976.

National Education Association National Commission on Teacher Education and Professional Standards. *New Horizons for the Teaching Profession.* Washington: National Education Association, 1961.

National Commission on Excellence. "An Open Letter to the American People. A Nation at Risk: The Imperative for Educational Reform." *Education Week.* (April 27, 1983) entire issue.

Reant, Marsha. *Status of the American Public School Teacher, 1975-1976.* Washington: National Education Association, 1977.

Rosner, Benjamin. *The Power of Competency Based Teacher Education: A Report.* Boston: Allyn and Bacon, 1972.

Smith, B. Othanel, S. Silverman, J. Borg, and B. Fry. *A Design for a School of Pedagogy.* Washington: U.S. Department of Education, 1980.

Smith, B. Othanel and others. *Teachers for the Real World.* Washington: American Association of Colleges for Teacher Education, 1969.

Turner, Joy. *Summary Description of Fees, Clock Hours, and Credits in College/University Programs Accredited By The American Montessori Society: 1982 PrePrimary.* 17583 Oak, Fountain Valley, CA 92708, 1983.

IMPLEMENTATION

THE CURRICULUM MESH: MONTESSORI AND DISTRICT REQUIREMENTS

Each Montessori teacher that arrives from training at the public school must relate to the curriculum requirements of the school district and the state in which his or her work is to begin. Most districts require a curriculum document which represents the Montessori program goals, performance objectives, scope and sequence, time allocations, and correlation with the district curriculum. When curriculum content is recorded and compared to the district and state requirements, the Montessori program can usually find its counterpart in the traditional curriculum. Sometimes teachers need to incorporate requirements when certain curriculum items that are not in the Montessori sequence are mandated.

The "on paper" curriculum statement does not necessarily mean that implementation of Montessori programming must reflect the various unit by unit, objective by objective, sequence by sequence, minute by minute guidelines indicated by the documents. The documents are an overall description of equivalences that dictate the content of the program and not necessarily the mode of instruction. They are used as verification of content correlations, not necessarily as working documents. Generally speaking, the working curriculum guidelines are the Montessori training albums written by the teacher during training.

When instituting a Montessori program, most systems require that the administrator or program coordinator create these aforementioned curriculum documents. However, it is most helpful for faculty to take part in the curriculum correlations so that they can compare Montessori goals for student achievement with district and state goals. Curriculum correlations should only be attempted when Montessori trained personnel and experienced curriculum resource people who know the traditional programs are available to oversee the process. (See Chapter Four, Appendix 7)

Program goals must be reviewed by new faculty and emphasized from year to year so that the entire faculty recognizes their responsibility in relation to program development. A well defined curriculum builds dialogue and unity of perspective, but should not necessarily impose sequential peformance objectives on the students. *The Montessori teacher must be permitted flexibility in his or her presentations which should be made in relation to the child's manifest needs and interests and not according to prescribed courses of study.* It is also key that the district not apply testing over short intervals that would be so specifically geared to curriculum objectives, scope and sequence, that teachers would be penalized for departing from the sequential structure of the district curriculum.

Certain school districts (Denver, Milwaukee) treat Montessori as an "experimental curriculum" placing little or no emphasis on the curriculum correlations, but rather accentuating program achievement tests, retention, attendance, and other generalized criteria which establish the efficacy of the program at the end of a three year cycle apart from isolated academic skill levels along the way.

AVOID DOUBLE CURRICULUM APPROACH

When the district curriculum is mandated along with the Montessori curriculum, lesson plans may reflect both curricula. This is quite cumbersome for Montessori trained teachers who are not familiar with the district curriculum. At the very least, there should be formal orientation to the district curriculum for Montessorians who are new to the district. Usually for the public school teacher who has subsequently become a Montessori teacher, the traditional approach which is most familiar will dominate if both curricula are required.The double curriculum approach creates a hybrid result which dilutes both the district and Montessori approaches so that there is really no clear educational format. A mediocre conviction on the part of the district about curriculum definition can produce confusion and general lack of coherence from both the district and Montessori points of view. Faculty who sustain a double curricula usually find the task overwhelming and eventually diminish the Montessori component in order to make their jobs manageable. Therefore it is important to keep Montessori the primary content of the program. District curriculum should be included only when district required content is not included in the Montessori format, and with careful consideration not to obscure the Montessori viewpoint.

AVOID MONTESSORI AS CURRICULUM ENRICHMENT

Many times, when Montessori curriculum is partially implemented with partially trained teachers, the program utilizes the district curriculum as the mainstay and uses the Montessori apparatus as a "manipulative" material to "enrich" the traditional curriculum. This presents enrichment possibilities for the current district curriculum which will undoubtedly improve the district curriculum. Why then worry about the consequences of this alternative use of Montessori pedagogy as a curriculum supplement?

Supplementing with Montessori materials undermines the full use of the materials. Montessori materials interconnect. Each piece of equipment isolates key difficulties, each building a sequence for discovery, each adding new passages leading to more complex information and process. The cannibalization of Montessori materials demeans their function and gives the user the impression that they are implementing a Montessori education when, in effect, they are implementing a piece of Montessori equipment. Montessori manipulatives enhance learning and should be regarded as essential experiences rather than as a reward for doing "dull" academic work.

An analogy might be the use of computers strictly for video games; they were designed for much more than video games. *The full significance of the Montessori materials relates to the psychology of the child; the materials are part of a sequence that corresponds with a developmental sequence in the child.* Each material has numerous applications which, when connected to other materials, increase the possibilities for child development. In short, the full power of the material is extensively diminished when used out of the context of the whole Montessori curriculum spiral.

TEACHER PLANNING AND CURRICULUM OBJECTIVES

Montessori is a comprehensive curriculum because it deals with the whole child and it must operate in direct response to observation of the whole child. To some degree management-by-objectives, where the teacher identifies preconceived competencies and curriculum content levels by grade level, may serve to prejudice the teacher's ability to respond to the spontaneous interests and needs of the child.

UNDERSTANDING MONTESSORI PASSAGES

The Montessori approach has its own structure and organization which might be described as "passages" or "pathways." Like the game of chess, which has specific rules, the Montessori materials have many creative applications within the limits of their use. Each Montessori material has implicit to its mechanics a series of manipulations and verbalizations which are reflected in the mastery of each passage. For example, the bead frame introduces a rational approach to multiplication with two digit multipliers including expanded notation, the function of multiplying times ten or multiples of ten, the function of the zero in the partial product, etc. Through observation, the teacher can pinpoint which passages have been experienced and mastered by each child. This type of sequential list of material passages is a useful way to look at curriculum objectives. They allow the teacher to chronicle intellectual progress and each child's unique response to those learning experiences. Such a record is for internal reference only, serving as a framework for organizing individual children's work and group lessons.

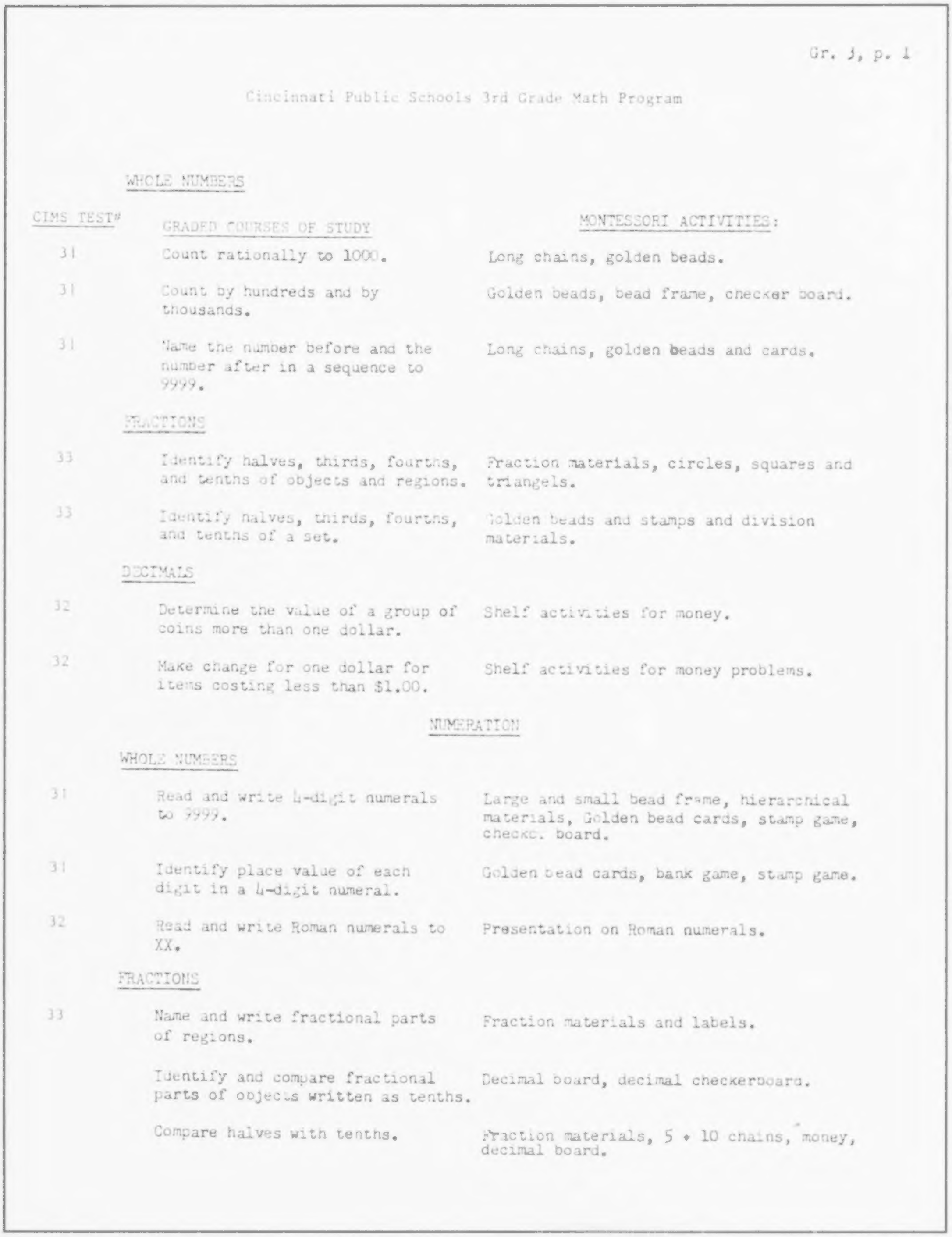
Appendix 3: Learning Outcomes — Vancouver Public Schools, Vancouver, British Columbia

This program lists desired learning outcomes on the left and appropriate Montessori materials on the right. No grade level is indicated.

LEARNING OUTCOMES	COMMENT
Oral Language During the Primary Years students should learn C. 1 to listen to a short presentation and recognize the main idea; C. 2 to follow simple oral directions; C. 3 to distinguish between the sounds of the letters; C. 4 and in addition students should have a variety of experiences such as listening to stories, choral speech, live plays, choral music, instrumental music. . . . D. 1 to express complete thoughts orally; D. 2 to speak clearly, with expression; D. 3 a larger speaking vocabulary; D. 4 and in addition students should have a variety of speaking experiences such as storytelling, choral speaking, role playing. . . .	C. 1) Group stories spontaneous children's comments. 2) Presentations for use of materials and command cards, oral exercises. 3) All sandpaper letters exercises - moveable alphabets and cards to match. 4) Stories read and told. Poems, most oral speeches and live plays are done as a preparation for the Christmas concert or for the concert at end of Scholastic year. Music bells. D. 1) Free oral expression times are provided throughout the day and at group times. 2,3,4) All these are covered in a variety of exercises for enrichment of vocabulary.
During the Intermediate Years students should learn C. 5 to listen to a short presentation, recognizing the main idea and supporting details; C. 6 to follow a series of oral directions. D. 5 to participate effectively in group discussions; D. 6 to develop appropriate qualities of voice in terms of inflection, volume, enunciation, and pronounciation; D. 7 a speaking vocabulary specific to the subject areas being studied	C. 5) Group reading and discussions. 6) This ability is incorporated in everyday practical life directions and when directing Science experiments. D. 5) Students organize their own group discussions, chaired by Teacher. Develop a theme and prove their "Thesis." 6) Promoted in classroom, specifically in Drama lessons. 7) All classified subject cards and reference books.
ARITHMETIC During the Primary Years students should learn E. 1 the concept of numbers through relating numbers symbols to real objects; E. 2 to read, understand place value, and write numerals to 999; E. 3 to recognize and use such symbols as those associated with addition, subtraction, multiplication, division, our money system, the concepts of equality and inequality . . .; E. 4 to solve addition and subtraction examples of two and three digit numbers; E. 5 to solve multiplication and division examples for products up to 50; E. 6 to make change accurately using coins and small bills	E. 1) All materials in Group 1 of Maths. 2) Materials of Group 2: Decimal System, building complex numbers, recognize value of numeral: place value. 3) All 2 Group exercises: Nature of operations, corresponding signs. 4) Taught with above materials and "stamp game" exercises. 5) Taught with above materials plus "multiplication" and "division" boards. 6) Yes, using real money and corresponding exercise

Appendix 4: Third Grade Math — Cincinnati Public Schools

Another example of format of correlations between Montessori and district curriculum goals and objectives required by school districts.



Gr. 3, p. 1

Cincinnati Public Schools 3rd Grade Math Program

CIMS TEST#	GRADED COURSES OF STUDY	MONTESSORI ACTIVITIES:
	WHOLE NUMBERS	
31	Count rationally to 1000.	Long chains, golden beads.
31	Count by hundreds and by thousands.	Golden beads, bead frame, checker board.
31	Name the number before and the number after in a sequence to 9999.	Long chains, golden beads and cards.
	FRACTIONS	
33	Identify halves, thirds, fourths, and tenths of objects and regions.	Fraction materials, circles, squares and triangels.
33	Identify halves, thirds, fourths, and tenths of a set.	Golden beads and stamps and division materials.
	DECIMALS	
32	Determine the value of a group of coins more than one dollar.	Shelf activities for money.
32	Make change for one dollar for items costing less than $1.00.	Shelf activities for money problems.
	NUMERATION	
	WHOLE NUMBERS	
31	Read and write 4-digit numerals to 9999.	Large and small bead frame, hierarchical materials, Golden bead cards, stamp game, checker board.
31	Identify place value of each digit in a 4-digit numeral.	Golden bead cards, bank game, stamp game.
32	Read and write Roman numerals to XX.	Presentation on Roman numerals.
	FRACTIONS	
33	Name and write fractional parts of regions.	Fraction materials and labels.
	Identify and compare fractional parts of objects written as tenths.	Decimal board, decimal checkerboard.
	Compare halves with tenths.	Fraction materials, 5 + 10 chains, money, decimal board.

Appendix 5: Pupil Performance Objectives Approved for Non-tax Supported Montessori Schools — State of Ohio

This is a detailed statement of Montessori standards for each grade (K-8) without reference to district curriculum utilizing a state mandated format.

Subject Math

Grade Level Lower Elem. 2nd year

Learning Objective	Criteria Component	Conditions	Assessment
Numeration			
* Counting-skip	*Fluent skip counting abstractly	*Oral/written on blackboard	*Teacher quizzes both oral and written
* Writing numbers to a million	*Able to recognize and read numerals *Able to write numerals in relation to command	*Oral/written material *Hierarchical material	*Utilization of the materials *Dictation/review *Oral dictation
*Category Identification	*Sight recognition of units, tens, hundreds, thousands, ten thousands, hundred thousands, millions	*Large bead frame *Checker board *Golden bead frame	*Teacher quizzes
* Converting Arabic to Roman Numerals	*Reading and writing Roman numerals	*Loose card material *Timeline of centuries	*Layout of equivalences *Teacher dictation
Addition & Subtraction			
* On paper with mixed formats and operations	*80% computational accuracy	*Problem cards *Problem sheets	*Mental drill *Problem sheets & homework
* Concept problems (story problems)	*Can reason independently	*Problem sources *Oral drill	*Coaching
Multiplication			
* One digit multipliers * Two digit multipliers (multiplication)	*80% accuracy at about 3 minutes a problem abstractly	*Large bead frame *Checkerboard *Gold bead frame *Problem cards *Problem sources	*Problem controls *Sequence advance *Homework *Coaching in class
* x10 x100 x1000 } concept	*Understands function of multiplying x10, x100, x1000 *Abstraction (independence) from the materials		
* Layout of "decanomial"	*Formatting of the facts		

IMPLEMENTATION

SUPERVISION AND ORGANIZATION

Academic supervision refers to the on-site guidance of Montessori teachers which allows the Montessori pedagogy to take root and become operational within a school. In general this requires a full-time curriculum resource person for each building as well as staff leadership and cooperation to make the project work. The role of the building principal is to *make sure that the implementation process as described is protected from the bureaucracy of the central curriculum while developing its own identity.* A principal can take Montessori training to enhance administration, but it is most likely that the building administrator, unless he or she teaches in the classroom, will still require an experienced Montessori teacher to direct the implementation process.

PHASING-IN MONTESSORI

The first requirement for developing a Montessori school is a wholehearted commitment from the building principal to implement Montessori at all levels of the school organization — parent education, curriculum, material resources, evaluation, and pupil progress reporting. Most essential is the underlying belief that the school will become a total Montessori institution and that comprehensive Montessori implementation without the burden of mixed curriculum goals will minimize confusion during a transition period. Two models for progressive Montessori implementation are outlined below. The phasing-in process, never instantaneous, generally takes from five to seven years.

Phasing-in Montessori, Phasing-out the Traditional Program

The following model is derived from a history of Greenfield Montessori School which began in 1983:

Year 1

Three classrooms are devoted to Montessori. Each class has a mixture of children ages three and four. Each room has one class in the morning and a different class in the afternoon for a total of six classes. The traditional part of the school has first through sixth grade, but no kindergarten. This provides a gap of one year between the Montessori school and the traditional school contributing to the separation of concepts.

Year 2

New three year olds are added to the Montessori program and three more rooms become Montessori rooms. There are no more double sessions. All six rooms have three, four and five year olds in the morning. The three and four year olds go home at noon and the five year olds stay all day. The traditional school has grades two through six.

Year 3

Three lower elementary classes begin with six year olds. There are still six preschool classes. The traditional school has grades three through six.

Year 4

There are still six preschool classes. The elementary classes now have five classes of six and seven year olds. The traditional class has grades four, five, and six.

Based on retention patterns, the school progressively phases out the traditional concept while establishing Montessori classes one year at one time (see graph below). In all cases the Montessori classes phase in Montessori immediately.

IDEAL MONTESSORI PHASE-IN PLAN

PROGRAM	YEAR							
	1	2	3	4	5	6	7	8
Montessori	P3 P4	P3 P4 P5	P3 P4 P5	P3 P4 P5	P3 P4 P5	P3 P4 P5	P3 P4 P5	P3 P4 P5
Traditional	1 2 3 4 5 6	2 3 4 5 6	1 3 4 5 6	1 2 4 5 6	1 2 3 5 6	1 2 3 4 6	1 2 3 4 5	1 2 3 4 5 6

Note: P = preschool

Conversion of School With Existing Staff and a Mixture of Montessori and Traditional Pedagogies

When constraints of funding or lack of planning necessitate immediate conversion of Montessori classes, traditional teachers, in the process of training, may not be able to make a clean departure from their established teaching approaches.

Montessori training is only the first phase of becoming a Montessori teacher. After the intense training received during the Montessori course, the trainees need an opportunity to practice Montessori as presented to them in the course in order to solidify Montessori expertise and make it their own. Trying to mix traditional and Montessori methods will find teachers with a traditional teaching repertoire unable to make a real transition to Montessori.

If the existing traditional classes are changed into three year age groupings before Montessori training is finished,an additional burden is placed on the teacher because he or she must now govern three grades worth of traditional curriculum while trying to implement Montessori education thereby creating conditions for overprogramming and overexertion.

Therefore, when districts demand total conversion, the following suggestions may be helpful:

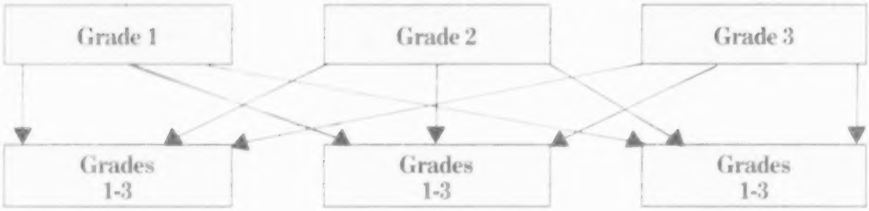
- *Establish a clear timeline for conversion to the Montessori conventional multi-age groups* which include ages three to six (preschool), ages six to nine (lower elementary) and ages nine to twelve (upper elementary).

IMPLEMENTATION

- If training is being provided in stages, maintain traditional grade classes until training is completed. *When training is completed, convert traditional single grade classes to Montessori multi-age clusters and begin Montessori implementation in full.* (Keep gender, relationships, race, age groupings in balance.)

- Once multi-age group clusters have been developed, *a novice Montessorian needs help in planning the year* for cycles of presentation. Often an experienced teacher is needed to develop an annual plan with each teacher in order to better respond to the needs of a multi-age class.

Sudden Conversion Plan



EARLY IMPLEMENTATION GUIDELINES

Teachers implement Montessori differently and at different rates according to their individual abilities. The extent of implementation should be guided by experienced Montessori professionals such as a trained principal, resource teacher, an in-house consultant, or any other experienced Montessorian appointed to help. When specialized help is not available, the principal may wish to select a group of faculty which possesses some Montessori implementation experience as a leadership team. The following procedures are utilized in almost any kind of early implementation situation:

- **Encounter *drift* from the Montessori curriculum.** Many times teachers are selective about which Montessori lessons they do because some are "too difficult" or "the children do not like the presentations." The teachers show loss of faith in the Montessori materials by omitting materials or including too many materials. Sometimes teachers drift away from Montessori materials back to traditional approaches. Monthly implementation meetings can bring drifters back to key Montessori lessons through shared faculty presentations, special trainer visits, and in-service workshops — both local and national.

- **Eliminate competency-based requirements** of the district curriculum during early implementation so that the teachers can implement their Montessori programs without concern about documenting grades, lesson plans, and evaluation data for programs other than Montessori. Adopt internal record keeping for Montessori passages geared to reporting pupil progress over three years time.

- **Orchestrate implementation resources.** Well organized material orders, classroom inventories, parent education events, handmade materials production, etc., make a difficult transition period run smoothly.

- **Utilize the monthly "walk about"** to look at the extent of implementation, special needs of children, degree of satisfaction, negative remarks, space and equipment problems, and teacher techniques in practice. Feedback can be given in writing utilizing an *Extent of Implementation* record form which reviews present and future progress (see Appendix 7 and 8). *Active coaching* includes observing individual lessons, group lessons, and the prepared environment, with an occasional demonstration of a lesson to the children when requested by the directress.

- **Treat resisters with respect.** Resisters are teachers who have not taken Montessori training or who are not adjusting to the school's transition to Montessori. They exist in every building. Some may be won over; others will transfer out of the building. The principal may wish to involve the resisters in special decision-making roles pertaining to non-pedagogical aspects of the building such as staff social activities, school fundraisers, and school beautification efforts in order to overcome feelings of exclusion, especially if they have chosen not to take Montessori training.

MAINTENANCE OF MONTESSORI

Usually when magnet funding ends, the support system for curriculum maintenance is eliminated. Institutionalization of Montessori implies that the support structures for the continuation of the curriculum remain in place as part of the operations of the school. The following are important aspects that will aid in the institutionalization process.

- New staff receive training and orientation in the curriculum, record keeping, collaborative review, and self-evaluation.
- Montessori curriculum is fully represented in the lesson plans and record keeping.
- A calendar cycle of in-services is structured annually.
- Replacement materials are ordered each year.
- A seasoned teacher team is dedicated to Montessori maintenance which avoids depending too much on change agents, outside consultants, and trainers who are on-site for a limited period of time.

MONTESSORI TEACHER GROWTH

Montessori training provides a new conceptual base for organizing instruction and introducing new content. Continuing education is required and involves several areas of study, particularly for the elementary level:

University or museum courses in geography, geology, botany, ecology, natural history, anthropology, evolution, paleontology; and humanities, philosophy, the history of education, and research.

Montessori in-service in classroom management, preschool and elementary interface, observation, creative writing, interpretive reading, music, art, implementation skills in practical life, reading, writing, math, etc. These in-service programs are offered through national Montessori associations.

Elementary Montessori teachers need to implement open-end areas of training by reaching consensus about: 1) providing classrooms with math problem sources, particularly cultural story problems, 2) outdoor education, 3) literature study including the art of discussion, 4) integration of grammar and creative writing, grammar sentences with sciences and social science topics, 5) advanced sentence analysis, 6) usage grammar in speaking, 7) physics, 8) timing of materials — upper and lower elementary, 9) American history, 10) great civilizations, 11) spelling rules, 12) vocabulary skills, 13) cursive handwriting conventions 14) geometry extensions, 15) diagnosis of special needs. These are typical areas where teachers can work in peer brainstorming groups.

Observations of good classroom models bring out peer discussion and comparison.

LIMITING TEXTBOOK ADOPTION

Many times well trained Montessori teachers will shun workbooks, readers, and other textbook sources. This is a positive response to training which focuses on the importance of teacher generated math problem sources and exercises which are geared to the Montessori materials. *Teachers should be encouraged to order and prepare Montessori handmade and unpublished materials before they order commercial source materials which may supplant rather than support the Montessori curriculum.* Limiting textbook purchasing not only preserves the Montessori program, it cuts costs.

It is possible, however, to conceive of some creative uses for textbooks — particularly to help prepare children over nine for different learning formats. Textbooks, especially if their formats help prepare the

IMPLEMENTATION

children for competency-based testing, can be cut up or indexed for their problem clusters and used on an individualized basis. A textbook for every child is not necessary; five or six books per class will provide problem sources for a small group lesson or for individualized work. Ideally several current textbooks should be available to children so that different formats and explications can be judged by the children as they use different textbooks. Total reliance on textbooks and workbooks, however, can displace Montessori, which has its own especially designed curriculum support materials (see Chapter Two for a listing of materials by subject area). Some materials will need to be handmade.

INDIVIDUALIZED INSTRUCTION*

"Individualization of instruction is based on the observation that children learn at varying rates and is encouraged by our social milieu that stresses individual liberty" (Lewis). The conventional material for individualized learning has been "programmed learning" which is self-correcting, sequential, highly motivational, computerized, etc. The materials are attractively packaged with programmed cards providing such standardized activities as fill-in-the-blank, multiple choice, and, on occasion, playful grids, crossword puzzles, etc.

Montessori individualization is not "programmed." This is readily perceptible to the novice when visiting an established Montessori class because there are varieties of activities which are unique in the following ways:

Montessori materials have an open-ended quality with various layers of exploration and meaning which cannot be captured by one-word or multiple choice answers. Children can use the materials in different ways in keeping with individual learning styles. For example, a child may need (or wish) to stay with the checkerboard verbalization of multiplier functions rather than move to the golden bead frame, or the child can go to abstraction with the bead frame instead of the checkerboard.

Montessori materials lead the child to discovery at many levels, moving the child's activities from concrete to abstract passages learned by watching the teacher's presentation. Then the child repeats the presentation, sometimes coached by the teacher. The learning process involves human interaction and information exchange: self-evaluation, observation, goal orientation, control of error, acceptance of mistakes, representation, etc. Repetition of activities is not prescribed, but rather is stimulated by the sensorial logic of the materials and the timing of the teacher's intervention.

The materials provide an overview for the child, moving from the general to the specific in analyzed steps, introducing one difficulty at a time.

The activities are reflective and interpretive — there is not one right answer. In this way an emphasis can be placed on relationships between each exercise and extensions of increasing complexity.

The child's introduction to a new material is guided by the dynamic observation of the teacher in relation to the child's individual interaction with the "prepared" environment. Progress is contingent on social and emotional behavior. Children teach each other and are observed accordingly.

Sequence is not rigidly controlled. Materials have parallel applications with the same concepts and skills. Therefore, the sequence of the materials to some degree relates to the perceived interest of the child and the discretion of the teacher. The sequence may be revised for each individual.

Individualization also depends on the teacher's knowing each individual challenge that allows the child to broaden his experience without feeling either overextended or underestimated.

**This section is derived in part from an article written by Larry Lewis entitled, "Individualized Instruction — Is It Montessori?"*

IMPLEMENTATION

MULTI-AGE GROUP DYNAMICS

Multi-age groups (ages 3-6, ages 6-9, and ages 9-12) enhance the Montessori dynamics by the following:

- **Reducing competition** — A variety of ages means that children will be more likely to find peers among a mixed group based on a variety of social, emotional, and intellectual levels not necessarily related to chronological age.
- **Broadening human perception** — Where there is diversity of ages, incidental perception of children at different developmental stages provides the teacher and the children with a greater range of insight.
- **Providing a social atmosphere** — Children of different ages generally humanize each other in a caring and affectionate manner. The atmosphere is *family.*
- **Intensifying learning** — The older children model learning for the younger ones and may actively teach the younger children. By assuming leadership in teaching, their own learning is reinforced.

ELEMENTARY CLASS GROUPING

Although there is no established procedure for grouping children in multi-age elementary group settings, it is clear that regrouping children from time to time can expand their social contacts and prevent segregation of abilities and behaviors. Generally, two kinds of grouping occur at the elementary level:

A three-cycle approach with children strategically placed according to ability and interest, but with basic curriculum presentations managed according to grade level. In other words, there is a first year cycle, a second year cycle, and a third year cycle. Although these divisions exist in planning, in actual practice it is important to plan smaller groups of children from different levels which change daily or weekly based on interest and teacher discretion.

The Great Lesson approach presents inspired lessons to the whole class with the children doing independently inspired group and individual work derived from their interest in what has been presented in the great lessons. This applies to work which is greater than the normative levels of work required by the district.

In most cases, the cycle-oriented approach is selected in the public sector since it can be more easily correlated to traditional curriculum objectives which are divided by grade. It is often easier to visualize multi-age group settings, especially in the context of public schools, if one documents areas of curriculum presentations as part of annual cycles for each grade level. This does not exclude inspirational class-wide lessons or the Great Lesson or Key Lesson approaches which should be incorporated at the same time.

OBSERVATION, RECORD KEEPING, AND EVALUATION*

In restructuring schools, the record keeping system must reflect the aims of the pedagogy. Patell suggests the following:

- keep records of presentations and activities that have been introduced to the children each week
- keep a monthly or six-week diary on each child's social development
- write up brief general notes on each child at the end of every term

In the preschool, the fundamental approach to Montessori evaluation is observation. Patell writes:

> From the Montessori point of view, the purpose of observation could be thought of as the cornerstone of our work. It is the indispensible part which makes our work come alive and become meaningful. It is a tool which enables us to follow the child's spontaneous manifestations not with the aim of studying the psychology of the child, but in order to refine our own thinking and understanding so as to be able to give the life of the child the help that it has the right to receive.

**Special acknowledgement to Hilla Patell, AMI Trainer Emeritus, London, England for this section. (Phoenix, 1989)*

IMPLEMENTATION

At the elementary level, observation of each child is combined with individual conferences designed to assist the child in becoming a co-evaluator of his or her development both academically and socially. Montessori calls for the making of a "scientific instrument" that could measure the "psychical manifestations of the child" based on the "repetitions of the actions" and "the polarization of attention" (*Spontaneous Activity*, p. 73). A classical record-keeping approach enables the teacher to note patterns of interest and the ability of the child to sustain interest (see Appendices 12, 16, 17, and 18, this chapter).

The materials hold the attention of the child and represent the means by which the child can act upon his environment. When the child, in response to the material, begins to concentrate, he is giving his full attention to an activity. He is teaching himself.

Observation, insists Patell, must be done on the job. One must gather data patiently and objectively, reflect on information gathered, and take appropriate steps upon arriving at a conclusion.

In building an understanding of the child, Patell indicates that to judge the child is not the objective in the Montessori class.

> In order to be objective we should not allow our perception to become clouded by personal preferences and prejudices, nor by personal expectations. It is a real struggle when one is trying to be objective not to allow past experiences to overshadow the observation of the moment...A useful practical discipline for oneself while observing is to keep awareness in the present — this simple but effective technique allows us to gather the necessary information without judging, assuming, labelling situations or individuals or reacting to situations.

The fundamental principle of Montessori pedagogy then, is the Montessori attitude. The directress or director gains understanding of the child through a watchful thoughtfulness. The directress then offers the child challenges with assurances of success.

THE PREPARED ENVIRONMENT

Montessori materials do not make a classroom a Montessori environment. Miss Patell, in examining the functions of the prepared environment which make possible valid observations of the child, poses the following questions:

> Is the focus within the *prepared environment* on the development of the whole personality, taking into account the child's physical, social, emotional, intellectual and spiritual needs, or is it on gaining skills and acquiring knowledge?
>
> Do the children have the freedom to fulfill their developmental needs?
>
> Are opportunities provided which allow the growing child to achieve successive levels of independence in thought and in action?
>
> Does the environment afford a place where the child can act for himself, direct his or her own life, and thereby become conscious of his or her own growing powers and abilities?
>
> Are the children given the responsibility to contribute to the care of the environment so that they feel a sense of belonging — a sense of self-worth?
>
> Do the children have the opportunity to acquire social skills through constant interaction within a community situation?
>
> Are we aware of the many facets of order that should be prevalent within the prepared environment, including the directress who presents with exactitude?
>
> Do we keep in mind the principles of moving from simple to complex experiences with an added challenge at each stage?

In summary Patell reminds us that:

> The materials are not intended just to provide instruction, they represent a means by which the children can act upon their environment. They are aids to the children's self-construction. By responding to sensitive periods and tendencies, the materials provide the right stimuli in order to capture the children's attention.

IMPLEMENTATION

CONFERENCES AND WORK DIARIES*

When beginning a Montessori elementary class, the daily journal or "work diary" kept by each child makes the child a partner in his or her own assessment: this process helps the child assume a feeling of responsibility and ownership of his or her education.

The journal is a simple log of the the child's time and activities for the day. It is important that journals are kept current and that the children are in the habit of using them daily. This may require scheduled times at the beginning, such as before lunch and before afternoon dismissal for filling out the diary.

The journal is used in a personal conference between child and teacher which takes place weekly or bi-weekly depending on the child's needs. The child brings all work done since the last conference.

At the conference the child discusses work that is completed and new directions for the future. The child may request presentation for which he or she feels ready, and the timing of the presentations in the upcoming weeks is scheduled right onto the teacher's planning sheets. If there has been work in one or two particular subjects, the child and the teacher may decide to schedule presentations in subjects which have been inactive. Also, productivity and work habits can be discussed. For example, when a child spends two hours doing four multiplication problems, it may mean that he needs to have the lesson repeated or that he needs help with motivation, self-discipline, time management, and social life.

NORMALIZATION

Fundamental to Montessori curriculum implementation is the concept of normalization. Normalization is a process where a child moves from being undisciplined to self-disciplined, from disordered to ordered, from distracted to focused. The process occurs through repitition on some piece of work that captivates the child's attention and represents an "inner change" which may take place quite suddenly and leads to deep concentration. Inner change refers to an impact on the child's whole aspect of behavior characterized by a sense of order, a love of work, profound focus, love of silence, working alone, sublimation of the possessive instinct, power to act from real choice, obedience, independence, initiative, and cooperative learning all in the context of freedom. Education is the means to normalization which implies "a harmonious growth of all potentialities of the child, mental and physical, according to the laws of his being" (Montessori, 1964).

WRITTEN REPORTS TO PARENTS

Written reports to parents are a supplement, not a replacement for parent conferences. Written reports communicate academic and classroom progress in the context of Montessori philosophy. They are important tools yet many Montessori programs do not take the opportunity to educate parents through the written reports.

- More than half of the fifteen districts submitting used conventional report cards to convey relative levels of success in Montessori curriculum.
- Several programs summarized Montessori sequences of materials with checklists and coded entries.
- Other report cards relied heavily on anecdotal reports and blank areas for academic progress lists where Montessori programming could be represented.

**Special acknowledgements to Diane Haldane, Greenfield Montessori School, Milwaukee, Wisconsin and Phyllis Pottish-Lewis, Corte Madera, California for this section.*

IMPLEMENTATION

Although under ideal circumstances report cards should reflect characteristics of the Montessori program, it is imperative, however, that they do not reflect itemization of program requirements that are not Montessori. A detailed listing of reading skill inventories, for example, would require that teachers report on components no longer relevant to Montessori pedagogy thereby obstructing communication of Montessori standards and confusing parents. In such cases report cards need to be modified.

Parent conferences provide the best kind of reporting, focusing on individual learning styles, interests, social interaction, emotional growth — in short, a well documented portrait of the child's personality as a whole, with learning as but one facet of a total picture.

Written reports are part of a communications tradition, and to some extent guarantee a minimum of information to parents. Insofar as they include grades or evaluative codes they are not in keeping with Montessori tenets which acknowledge that self-motivation is derived from the intrinsic nature of the child's work and not from a system of rewards or penalties.

Appendix 6: Montessori Scope and Sequence (K-8) — Ruffing Montessori School, Cleveland, Ohio

This is one segment of a state-mandated scope and sequence of an entire program presented skill-by-skill indicating Montessori curriculum outcomes by age and materials.

Mathematics

SCOPE AND SEQUENCE CHART

TOPIC	AGE 10	MATERIALS
III. Properties of Number	Students will be able:	
	To solve first degree equations in addition, subtraction, multiplication & division	
IV. Measurement	Students will be able:	
	To calculate the volume of rectangular prisms	Volume Material
	To measure the circumference, area & sectors of a circle	
	To derive the formulas for volume calculations	
V. Problem Solving	Students will be able:	
	To study special topics in science & geography	
	To continue third level study of; distance, velocity, time, percent, interest	
	To solve word problems	

Appendix 7: "Montessori Program Coordinator / Resource Teacher" — excerpted from the *Montessori Public School Consortium Report*, 1988.

An experienced Montessori trained professional is essential to the fostering of a mature Montessori program. Montessori values and standards are maintained with each succeeding generation of teacher by an authoritative individual.

MANAGEMENT

MONTESSORI ACADEMIC LEADERSHIP:

Montessori Program Coordinator / Resource Teacher

(Adapted from Milwaukee Public School Job Description)

The MPSC stresses the importance of a professionally trained Montessori supervisor. The Montessori Coordinator is directly responsible to the principal. The basic function of the Montessori Coordinator is to assist in the development, coordination and implementation of the pre-kindergarten through grade six Montessori program. It is recommended that the Montessori Coordinator have Montessori training and experience at both the preschool and elementary levels. The major responsibilities of this position are to:

- *Assist in recruiting and hiring Montessori-trained teachers and assistants*
- *Order materials*
- *Establish and supervise Montessori classrooms including planning and record keeping*
- *Develop and maintain parent education*
- *Oversee the preparation of Montessori materials*
- *Organize parent volunteers*
- *Coordinate staff development activities with teachers and assistants in and out of the classroom*
- *Plan and execute the creation of additional levels and components of the Montessori program*
- *Complement the principal, elementary educational administration, and central administration in the pursuit of the development and implementation of the Montessori program*
- *Maintain a flexible schedule capable of multiple task undertakings and spontaneous adjustments to circumstances as they arise*
- *Remain available for a variety of short-term activities that may present themselves on a day-to-day basis*
- *Attend conferences, workshops, in-services, meetings or classes as needed to support the development of the Montessori program*
- *Assist the principal in the preparation of periodic reports on the development and implementation of the Montessori program*
- *Draft correspondence to teachers, administrators, parents or community, and proposals to foundations, as needed, to support the Montessori program*
- *Provide leadership and direction in regularly scheduled staff meetings*
- *Act as a liasion between magnet school, public school, administrators, and community organizations*
- *Develop Montessori-specific evaluation materials which also take into consideration district evaluation criteria*

Montessori Resource Persons Recommended by the Consortium

Of the many knowledgeable people involved in Montessori public education, the following Montessori trained people have agreed to serve as MPSC resource persons until more formal networking programs can be established. Consult the directory for phone numbers and addresses.

Paula Biwer — Principal of Mitchell Montessori in Denver, Colorado. She gained extensive experience in curriculum coordination and development while employed by the Milwaukee Public Schools and is currently directing a research project measuring, in particular, the impact of Montessori on the family.

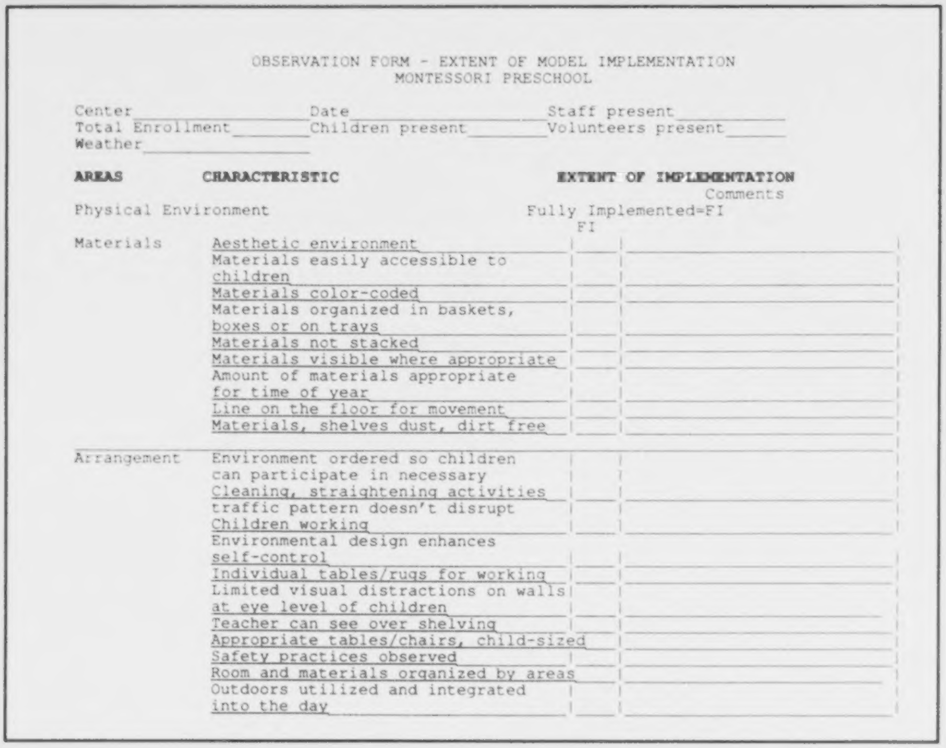
David Kahn — Executive Director of the North American Montessori Teachers' Association and Project Director of the NAMTA Public School Study. Prior to assuming the leadership of NAMTA, he served twelve years as a teaching principal at a large, private Montessori school.

Jean K. Miller, PhD. — Curriculum Coordinator for Greenfield Montessori School in Milwaukee, Wisconsin. Jean has excellent understanding of Montessori curriculum as well as a broad based education background with special expertise in Montessori music.

Phyllis Williams — Principal of North Avondale School in Cincinnati, Ohio. Ms. Williams has been active in the Montessori public school education movement since 1973 and has a sense of how to develop dynamic Montessori programming using parent resources.

Appendix 8: Observation Form — Extent of Model Implementation Preschool, Philadelphia, 1976

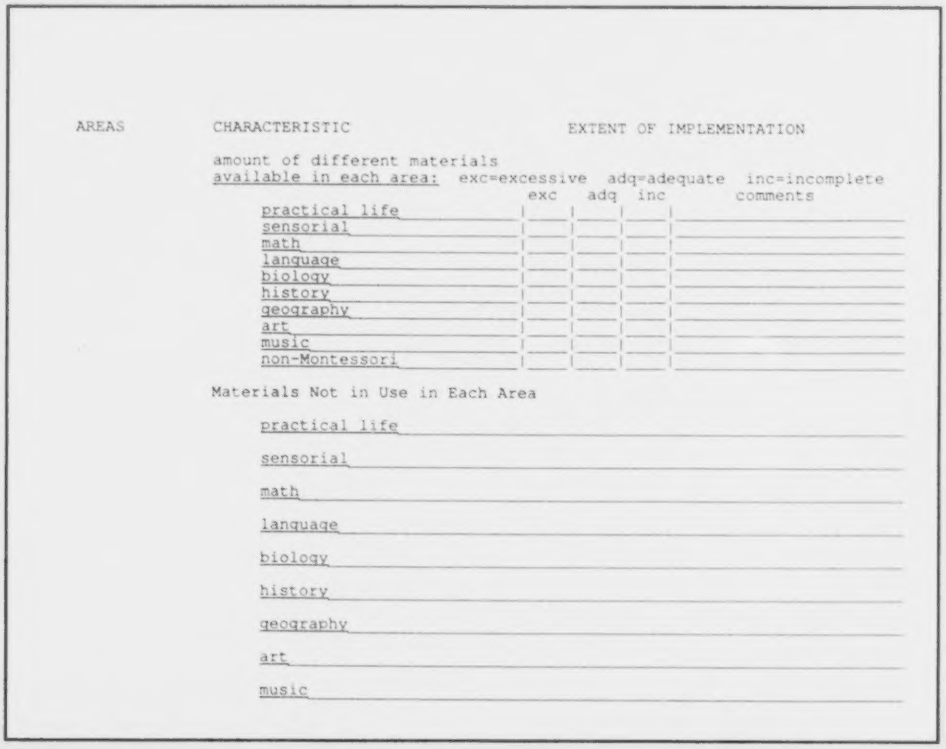
Based on the format derived from the Philadelphia School District in 1976, the NAMTA editorial staff has created preschool and elementary models for recording implementation progress on an individual classroom basis.



OBSERVATION FORM - EXTENT OF MODEL IMPLEMENTATION
MONTESSORI PRESCHOOL

Center ________ Date ________ Staff present ________
Total Enrollment ________ Children present ________ Volunteers present ________
Weather ________

AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION Fully Implemented=FI FI	Comments
Physical Environment			
Materials	Aesthetic environment		
	Materials easily accessible to children		
	Materials color-coded		
	Materials organized in baskets, boxes or on trays		
	Materials not stacked		
	Materials visible where appropriate		
	Amount of materials appropriate for time of year		
	Line on the floor for movement		
	Materials, shelves dust, dirt free		
Arrangement	Environment ordered so children can participate in necessary Cleaning, straightening activities		
	traffic pattern doesn't disrupt Children working		
	Environmental design enhances self-control		
	Individual tables/rugs for working		
	Limited visual distractions on walls at eye level of children		
	Teacher can see over shelving		
	Appropriate tables/chairs, child-sized		
	Safety practices observed		
	Room and materials organized by areas		
	Outdoors utilized and integrated into the day		



AREAS CHARACTERISTIC EXTENT OF IMPLEMENTATION

amount of different materials available in each area: exc=excessive adq=adequate inc=incomplete

	exc	adq	inc	comments
practical life				
sensorial				
math				
language				
biology				
history				
geography				
art				
music				
non-Montessori				

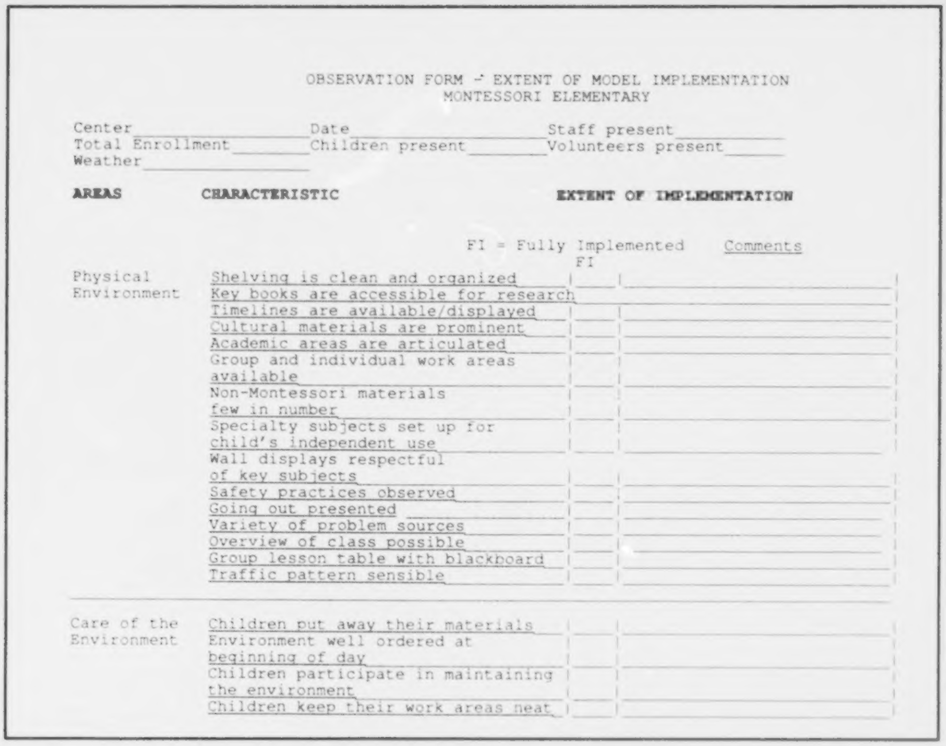
Materials Not in Use in Each Area

practical life ________
sensorial ________
math ________
language ________
biology ________
history ________
geography ________
art ________
music ________

AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION - COMMENTS	
		Fully Implemented	Comments
Children's sense of order	Children demonstrate care of materials		
	Environment well-ordered at beginning of day		
	Chairs pushed in when leaving tables		
	Children clean up after themselves		
Collective Grouping	Uninterrupted time allowed for individual activities (3 hours)		
	Large group activities appropriate for developmental level of children		
	Large group activities of an appropriate time duration (5-15 min)		
	Provision made for giving lessons without interruption		
	Teacher able to work individually while managing whole group		
	Large group activities:		
	Small group activities:		
Record keeping	Records document children's progress systematically		
	Lesson planning for individual children		
	Lesson planning for developmental age groups		
	Planning for periodic enrichment by area		
	Descriptive records:		
	checklist of activities by children		
	anecdotal observation notes		
	observation graphs		

AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION - COMMENTS	
		Fully Implemented	Comments
Degree of independence demonstrated by children	Choose, use, return materials		
	Fix mistakes, take care of problems on their own		
	Use adults and children as resources		
	Initiate activities		
	Select challenging work		
	Degree of concentration		
	Continues to work in teacher's absence		
	Work without external rewards or praise		
	routines reflect independence and integration of individual procedures		
	snack		
	toileting		
	hand washing		
Child/Child interaction	Children help each other		
	Children teach each other		
	Children work in community atmosphere		
	Social problems resolved mutually with consideration of individuals		
	Respect shown for people, activities and property		
Adult/Child Interaction	Adults encourage children to solve their own problems		
	Eye level contact used when speaking to one child		
	Adults use quiet voices		
	Adults initiate activity when needed		
	Adults speak to children personally and individually		
	Adults provide and model lessons in grace and courtesy		
	Adults are able to observe the class		

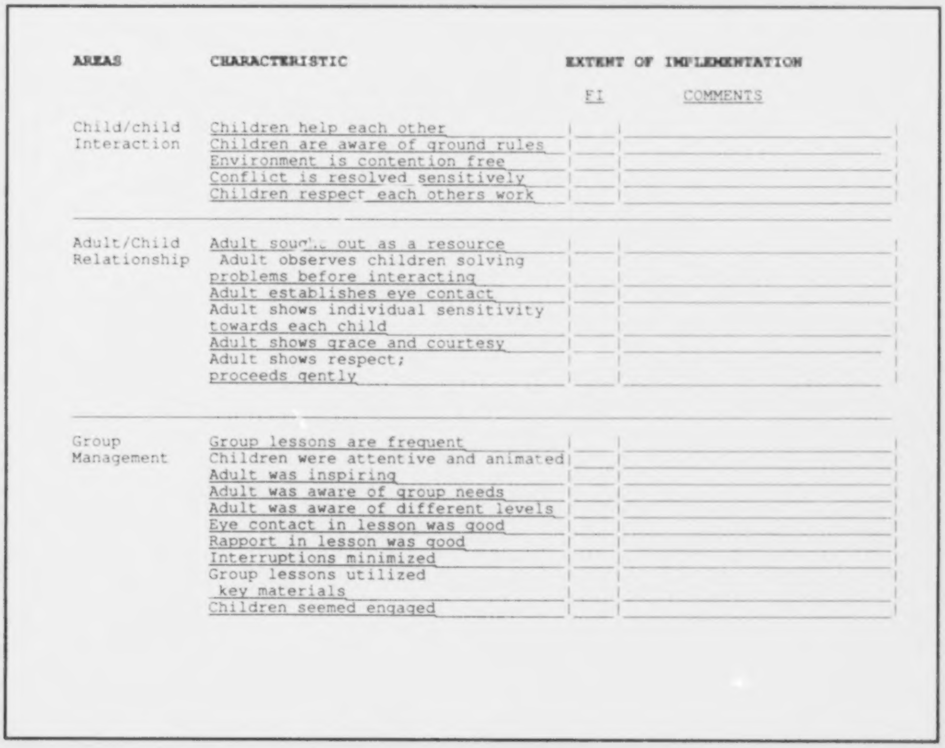
Appendix 9: Elementary Observation Form — Extent of Model Implementation



OBSERVATION FORM - EXTENT OF MODEL IMPLEMENTATION
MONTESSORI ELEMENTARY

Center________ Date________ Staff present________
Total Enrollment________ Children present________ Volunteers present________
Weather________

AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION FI = Fully Implemented FI	Comments
Physical Environment	Shelving is clean and organized		
	Key books are accessible for research		
	Timelines are available/displayed		
	Cultural materials are prominent		
	Academic areas are articulated		
	Group and individual work areas available		
	Non-Montessori materials few in number		
	Specialty subjects set up for child's independent use		
	Wall displays respectful of key subjects		
	Safety practices observed		
	Going out presented		
	Variety of problem sources		
	Overview of class possible		
	Group lesson table with blackboard		
	Traffic pattern sensible		
Care of the Environment	Children put away their materials		
	Environment well ordered at beginning of day		
	Children participate in maintaining the environment		
	Children keep their work areas neat		



AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION FI	COMMENTS
Child/child Interaction	Children help each other		
	Children are aware of ground rules		
	Environment is contention free		
	Conflict is resolved sensitively		
	Children respect each others work		
Adult/Child Relationship	Adult sought out as a resource		
	Adult observes children solving problems before interacting		
	Adult establishes eye contact		
	Adult shows individual sensitivity towards each child		
	Adult shows grace and courtesy		
	Adult shows respect; proceeds gently		
Group Management	Group lessons are frequent		
	Children were attentive and animated		
	Adult was inspiring		
	Adult was aware of group needs		
	Adult was aware of different levels		
	Eye contact in lesson was good		
	Rapport in lesson was good		
	Interruptions minimized		
	Group lessons utilized key materials		
	Children seemed engaged		

AREAS	CHARACTERISTIC	EXTENT OF IMPLEMENTATION	
		FI	COMMENTS
Independent Work	Children seemed sure of their choices		
	Children worked with a sense of enjoyment		
	Work is purposeful, detailed, and accurate		
	Children work without direct adult supervision		
	Children initiate work		
	Children help each other		
	Children work together keeping socializing in moderation		
	Children show sustained concentration		
Record keeping	Records kept which document children's progress		
	Lesson planning is evident for year, week, day		
Implementation Difficulties	Age of child entering		
	Consistency of attendance		
	Training of the teacher		
	Willingness of the teacher to do Montessori		
	Length of school year		
	Length of school day		
	Protection of work cycle		
	Administrative cooperation		
	Background of children		

AREAS **CHARACTERISTIC** **EXTENT OF IMPLEMENTATION**

Amount of Different Materials Available in Each Area: exc=excessive adq=adequate inc=incomplete

	exc	adq	inc	comments
math				
language				
biology				
history				
geography				
art				
music				
non-Montessori				

Materials **Not** in Use in Each Area

math

language

biology

history

geography

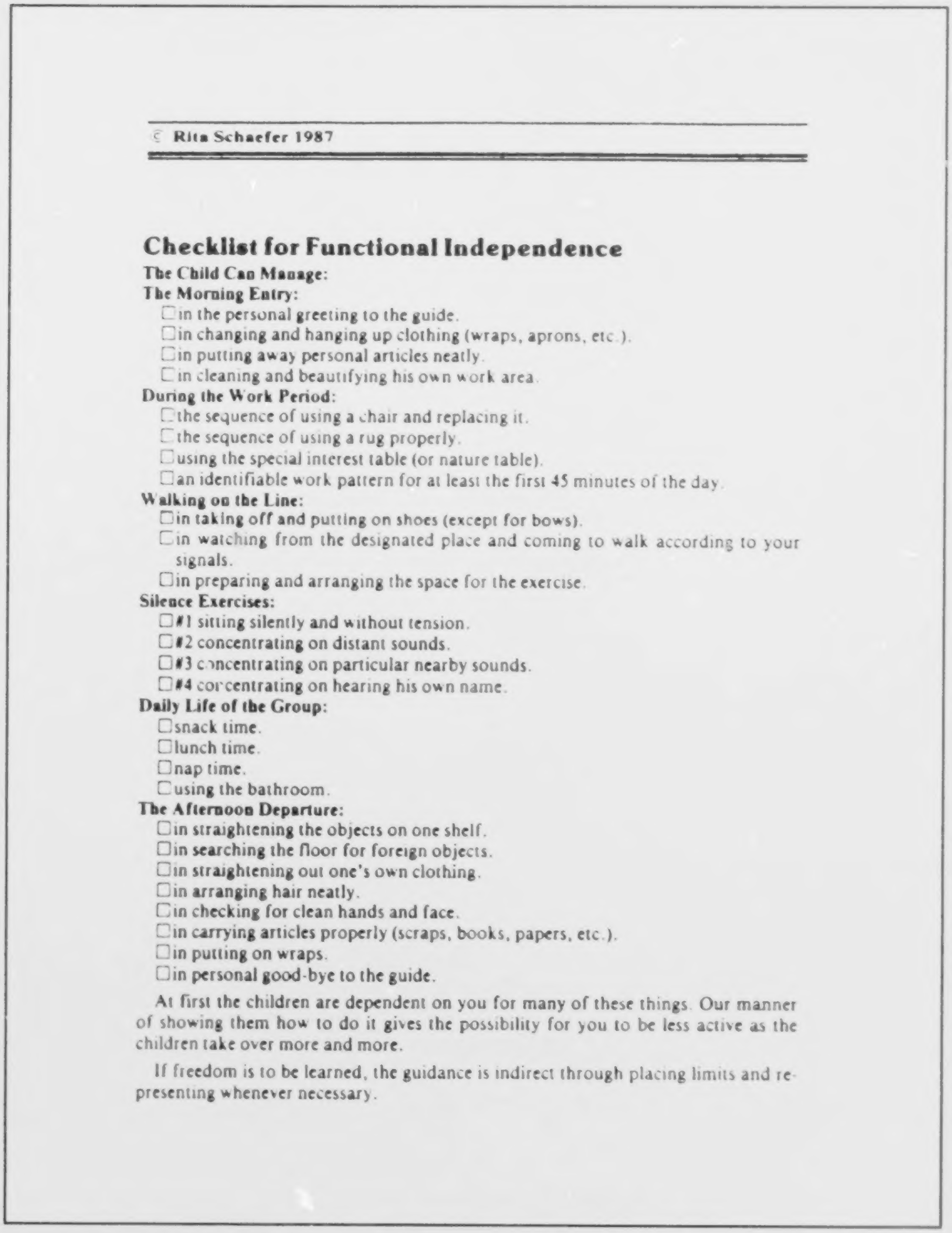
art

music

non-Montessori

Appendix 10: Implementation Checklist — Self-Evaluation, Rita Schaefer, AMI Trainer

A list to help novice teachers keep in mind their Montessori basics in the flurry of starting up.



© Rita Schaefer 1987

Checklist for Functional Independence

The Child Can Manage:

The Morning Entry:

- ☐ in the personal greeting to the guide.
- ☐ in changing and hanging up clothing (wraps, aprons, etc.).
- ☐ in putting away personal articles neatly.
- ☐ in cleaning and beautifying his own work area.

During the Work Period:

- ☐ the sequence of using a chair and replacing it.
- ☐ the sequence of using a rug properly.
- ☐ using the special interest table (or nature table).
- ☐ an identifiable work pattern for at least the first 45 minutes of the day.

Walking on the Line:

- ☐ in taking off and putting on shoes (except for bows).
- ☐ in watching from the designated place and coming to walk according to your signals.
- ☐ in preparing and arranging the space for the exercise.

Silence Exercises:

- ☐ #1 sitting silently and without tension.
- ☐ #2 concentrating on distant sounds.
- ☐ #3 concentrating on particular nearby sounds.
- ☐ #4 concentrating on hearing his own name.

Daily Life of the Group:

- ☐ snack time.
- ☐ lunch time.
- ☐ nap time.
- ☐ using the bathroom.

The Afternoon Departure:

- ☐ in straightening the objects on one shelf.
- ☐ in searching the floor for foreign objects.
- ☐ in straightening out one's own clothing.
- ☐ in arranging hair neatly.
- ☐ in checking for clean hands and face.
- ☐ in carrying articles properly (scraps, books, papers, etc.).
- ☐ in putting on wraps.
- ☐ in personal good-bye to the guide.

At first the children are dependent on you for many of these things. Our manner of showing them how to do it gives the possibility for you to be less active as the children take over more and more.

If freedom is to be learned, the guidance is indirect through placing limits and re-presenting whenever necessary.

Appendix 11: Suggested Preschool Work Levels — Midwest Montessori Training Center, Milwaukee, Wisconsin

Work levels are generally established at each school by faculty consensus. Work levels help establish some sense of pace and accountability that is especially useful in the public schools.

2½ - 3½

Practical Life	Sensorial	Language	Cultural
Spooning	Solid Cylinders 1 2 3 4	Vocabulary Enrichment	Land and Water Forms
Pouring			
Button Frame	Pink Tower		Sandpaper Globe
Zipper	Broad Stair		Colored Globe
Snaps	Red Rods		Continent Map
Buckle	Color Boxes 1 2 3	Sound Games	
Hook and Eye	Touch Tablets		
Tying	Fabrics	Sandpaper Letters a b c d e f g h i j	
Lacing	Geometric Cabinet 1 2 3 4 5 6 Cards	k l m n o p q r s t	
Safety Pin		u v w x y z	
Washing Hands	Geometric Solids		
Polishing	Sorting		
	Mystery Bag		
Polishing Shoes	Baric Tablets		
Washing a Table	Thermic Tablets		
Dusting	Sound Boxes		
Sweeping	Bells matching grading		
Folding			
Flower Arranging	Binomial Cube		

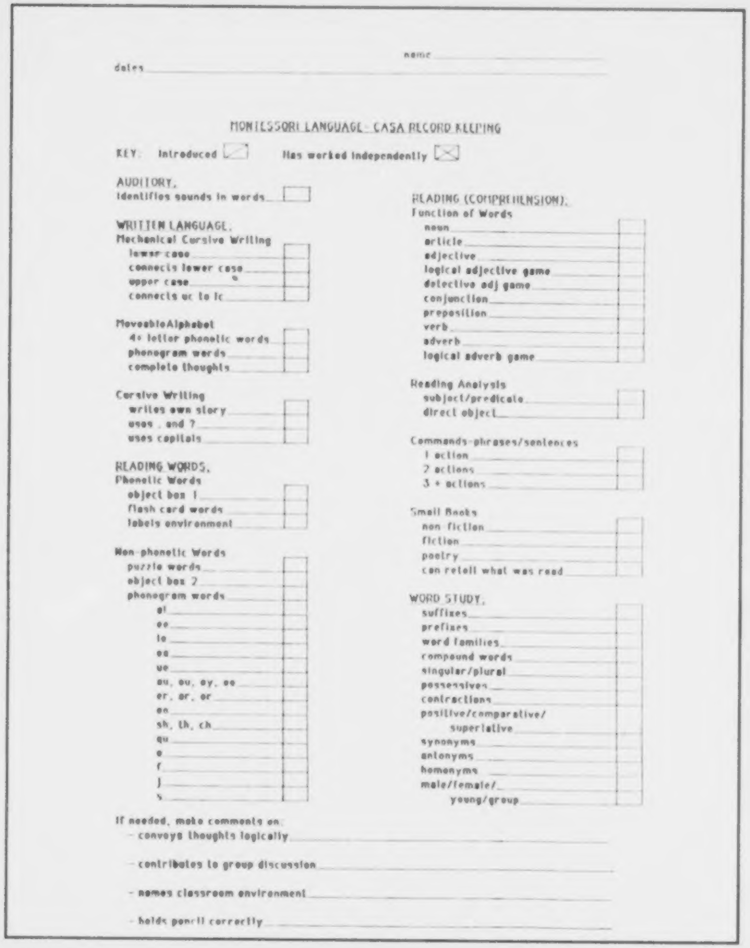
3½ - 4½

Practical Life	Sensorial	Language	Mathematics
Care of Environment	Tasting	Sandpaper Letters a b c d e f g h i j k l m n o p q r s t u v w x y z	Number Rods
	Smelling		Sandpaper Numbers 1 2 3 4 5 6 7 8 9 10
	Botany Cabinet		
Care of Self, Others	Trinomial Cube	Metal Insets	Rods and Cards
	Constructive Triangles 1 2 3 4 5	1 2 3 4 5 6 7 8	Spindle Boxes
		Movable Alphabet	Cards and Counters
	Knobless Cylinders 1 2 3		Memory Game
	Super-imposed Geometric Figures	Phonetic Object Game	Decimal System: beads cards
		Phonograms	Formation of numbers
Cultural	Language		Teen Beads
			Teen Board
Continent Maps sens. lang. North America South America Africa Europe Asia			Beads and Board
			Ten Board & Beads
		Puzzle Words	
Folders			
Flags			
Zoology and Botany Cards			
	Games	Writing:	
		Chalkboards	
		Pencil	
	Bells		

Sensorial	Language	Mathematics	Cultural
Language	Metal Insets 1 2 3 4 5 6 7 8 Movable Alphabet Phonograms Puzzle Words Reading Classification	Linear Counting 100 1000 Skip Counting Decimal System + static + dynamic − static − dynamic × ÷ static ÷ dynamic ÷ with tubes Stamp Game	Flags Puzzles Map-making Language Definition Booklets
Games	Function of Words: article adjective logical adjective detective adjective conjunction preposition verb adverb verb activities Commands Reading Analysis 1 2	+ × − ÷ Dot Game Addition Snake Game Strip Board Charts 1 2 3 4 Subtraction Negative Snake Game Strip Board Charts 1 2 Multiplication Bead Bar Layout Board Charts 1 2 3	History and Science Cards
Skills	Extensions Extensions, Attributes, Appositions Word Study Writing Punctuation	Division Unit Division Board Charts 1 2 Short Long Small Bead Frame Fractions	

Appendix 12: Primary Language, Math and Geometry Record Keeping Documents — Milwaukee Public Schools, Milwaukee, Wisconsin

Note that this document indicates only whether the material has been introduced and worked with independently. No "mastery" level is indicated to avoid misconceptions, especially in terms of students retaining what they know.



name ____________

dates ____________

MONTESSORI LANGUAGE - CASA RECORD KEEPING

KEY: Introduced ⧄ Has worked independently ☒

AUDITORY,
Identifies sounds in words ☐

WRITTEN LANGUAGE,
Mechanical Cursive Writing
- lower case ☐
- connects lower case ☐
- upper case ☐
- connects uc to lc ☐

MoveableAlphabet
- 4+ letter phonetic words ☐
- phonogram words ☐
- complete thoughts ☐

Cursive Writing
- writes own story ☐
- uses . and ? ☐
- uses capitals ☐

READING WORDS,
Phonetic Words
- object box 1 ☐
- flash card words ☐
- labels environment ☐

Non-phonetic Words
- puzzle words ☐
- object box 2 ☐
- phonogram words ☐
  - ai ☐
  - ee ☐
  - ie ☐
  - oa ☐
  - ue ☐
  - au, ou, oy, oe ☐
  - er, ar, or ☐
  - en ☐
  - sh, th, ch ☐
  - qu ☐
  - e ☐
  - f ☐
  - j ☐
  - s ☐

READING (COMPREHENSION),
Function of Words
- noun ☐
- article ☐
- adjective ☐
- logical adjective game ☐
- detective adj game ☐
- conjunction ☐
- preposition ☐
- verb ☐
- adverb ☐
- logical adverb game ☐

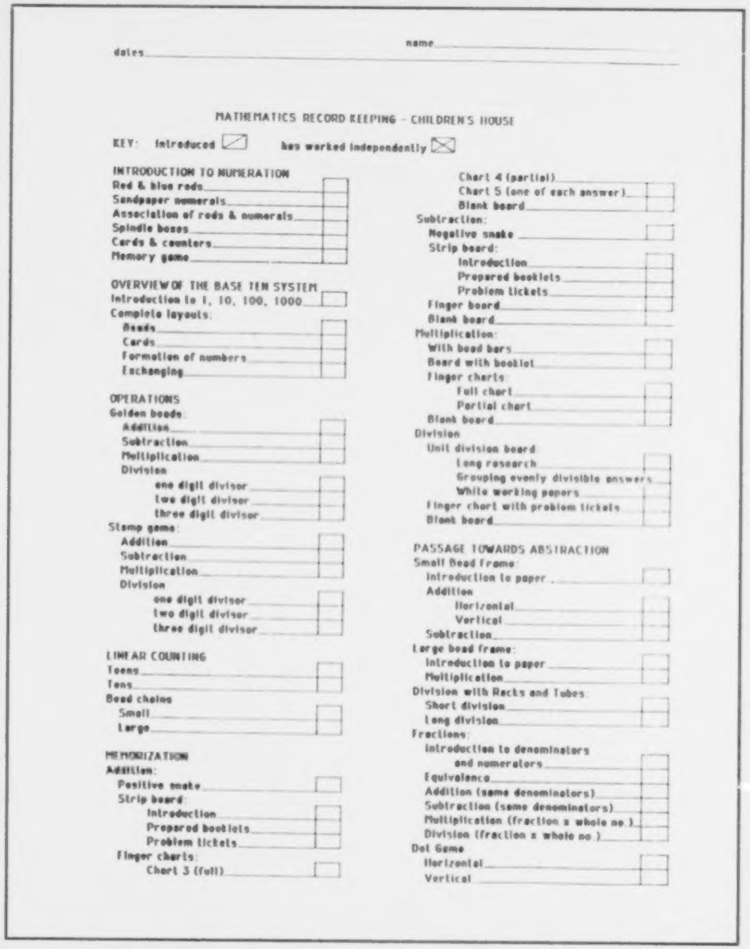
Reading Analysis
- subject/predicate ☐
- direct object ☐

Commands-phrases/sentences
- 1 action ☐
- 2 actions ☐
- 3 + actions ☐

Small Books
- non fiction ☐
- fiction ☐
- poetry ☐
- can retell what was read ☐

WORD STUDY,
- suffixes ☐
- prefixes ☐
- word families ☐
- compound words ☐
- singular/plural ☐
- possessives ☐
- contractions ☐
- positive/comparative/superlative ☐
- synonyms ☐
- antonyms ☐
- homonyms ☐
- male/female/young/group ☐

If needed, make comments on:
- conveys thoughts logically ____________
- contributes to group discussion ____________
- names classroom environment ____________
- holds pencil correctly ____________



name ____________

dates ____________

MATHEMATICS RECORD KEEPING - CHILDREN'S HOUSE

KEY: introduced ⧄ has worked independently ☒

INTRODUCTION TO NUMERATION
- Red & blue rods ☐
- Sandpaper numerals ☐
- Association of rods & numerals ☐
- Spindle boxes ☐
- Cards & counters ☐
- Memory game ☐

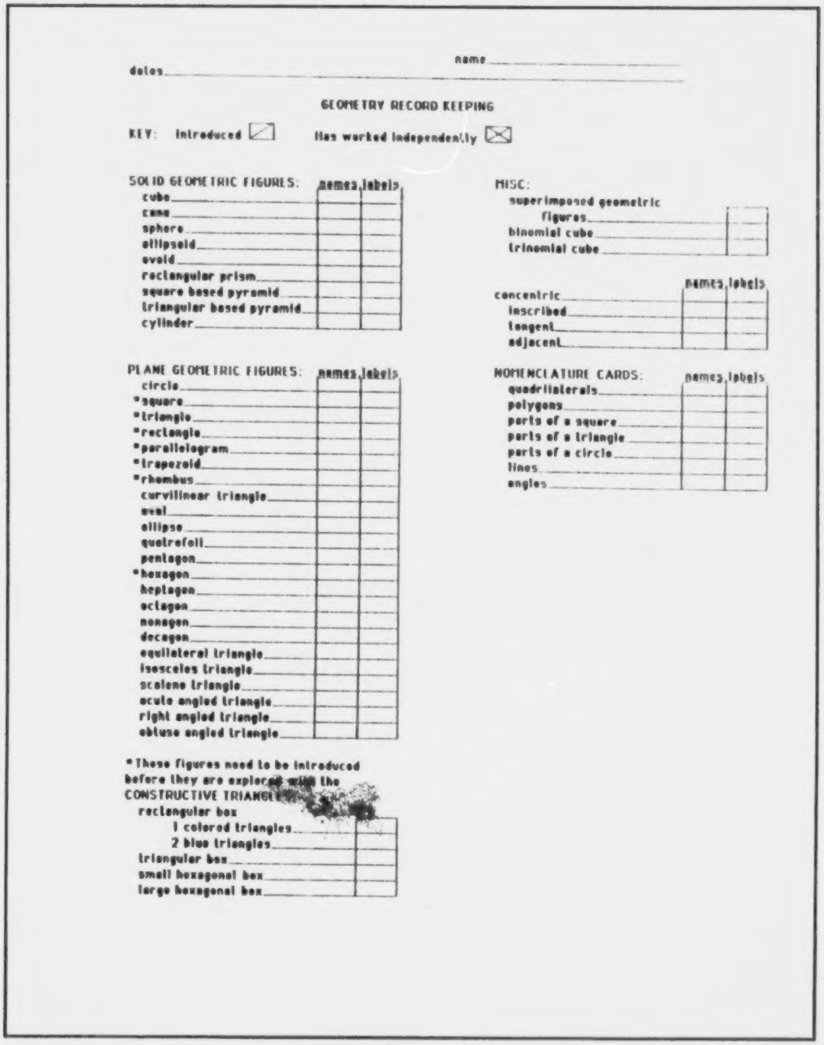
OVERVIEW OF THE BASE TEN SYSTEM
- Introduction to 1, 10, 100, 1000 ☐
- Complete layouts:
  - Beads ☐
  - Cards ☐
  - Formation of numbers ☐
  - Exchanging ☐

OPERATIONS
- Golden beads:
  - Addition ☐
  - Subtraction ☐
  - Multiplication ☐
  - Division
    - one digit divisor ☐
    - two digit divisor ☐
    - three digit divisor ☐
- Stamp game:
  - Addition ☐
  - Subtraction ☐
  - Multiplication ☐
  - Division
    - one digit divisor ☐
    - two digit divisor ☐
    - three digit divisor ☐

LINEAR COUNTING
- Teens ☐
- Tens ☐
- Bead chains
  - Small ☐
  - Large ☐

MEMORIZATION
- Addition:
  - Positive snake ☐
  - Strip board:
    - Introduction ☐
    - Prepared booklets ☐
    - Problem tickets ☐
  - Finger charts:
    - Chart 3 (full) ☐
    - Chart 4 (partial) ☐
    - Chart 5 (one of each answer) ☐
  - Blank board ☐
- Subtraction:
  - Negative snake ☐
  - Strip board:
    - Introduction ☐
    - Prepared booklets ☐
    - Problem tickets ☐
  - Finger board ☐
  - Blank board ☐
- Multiplication:
  - With bead bars ☐
  - Board with booklet ☐
  - Finger charts:
    - Full chart ☐
    - Partial chart ☐
  - Blank board ☐
- Division
  - Unit division board:
    - Long research ☐
    - Grouping evenly divisible answers ☐
    - While working papers ☐
  - Finger chart with problem tickets ☐
  - Blank board ☐

PASSAGE TOWARDS ABSTRACTION
- Small Bead Frame:
  - Introduction to paper ☐
  - Addition
    - Horizontal ☐
    - Vertical ☐
  - Subtraction ☐
- Large bead frame:
  - Introduction to paper ☐
  - Multiplication ☐
- Division with Racks and Tubes:
  - Short division ☐
  - Long division ☐
- Fractions:
  - Introduction to denominators and numerators ☐
  - Equivalence ☐
  - Addition (same denominators) ☐
  - Subtraction (same denominators) ☐
  - Multiplication (fraction x whole no.) ☐
  - Division (fraction x whole no.) ☐
- Dot Game
  - Horizontal ☐
  - Vertical ☐



name ______________________

dates ______________________

GEOMETRY RECORD KEEPING

KEY: Introduced ◪ Has worked independently ☒

SOLID GEOMETRIC FIGURES:	names	labels
cube		
cone		
sphere		
ellipsoid		
ovoid		
rectangular prism		
square based pyramid		
triangular based pyramid		
cylinder		

PLANE GEOMETRIC FIGURES:	names	labels
circle		
*square		
*triangle		
*rectangle		
*parallelogram		
*trapezoid		
*rhombus		
curvilinear triangle		
oval		
ellipse		
quatrefoil		
pentagon		
*hexagon		
heptagon		
octagon		
nonagon		
decagon		
equilateral triangle		
isosceles triangle		
scalene triangle		
acute angled triangle		
right angled triangle		
obtuse angled triangle		

*These figures need to be introduced before they are explored with the CONSTRUCTIVE TRIANGL[illegible]

rectangular box	
1 colored triangles	
2 blue triangles	
triangular box	
small hexagonal box	
large hexagonal box	

MISC:	
superimposed geometric figures	
binomial cube	
trinomial cube	

	names	labels
concentric		
inscribed		
tangent		
adjacent		

NOMENCLATURE CARDS:	names	labels
quadrilaterals		
polygons		
parts of a square		
parts of a triangle		
parts of a circle		
lines		
angles		

Appendix 13: Work Curve Charts — *Spontaneous Activity in Education*, Maria Montessori

A precursor of the ethnographic study, the work curve shows a broken "line of quiescence" which is the child in an "intent state." Work is indicated when the solid "line of work" is above the line, when the "line" dips below the line of quiescence, disorderly actions are indicated. Chart four shows a "normalized" child with sustained concentration with a short period of recreation at the end. The charts are generated over a three hour uninterrupted work period.

Excerpted from SPONTANEOUS ACTIVITY IN EDUCATION
by Maria Montessori

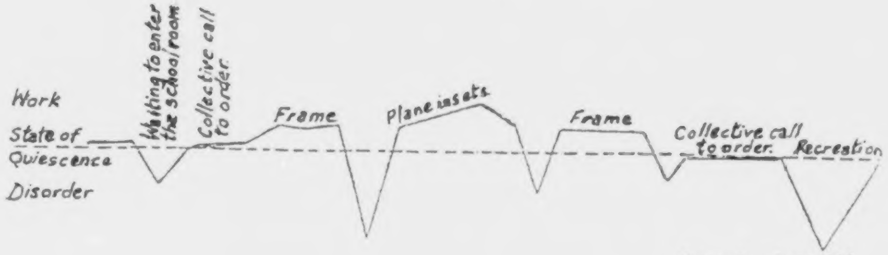


Chart 1 Page 100

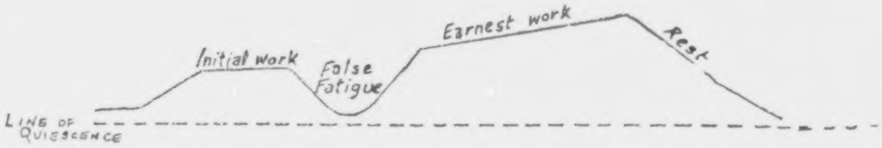


Chart 2 Page 108

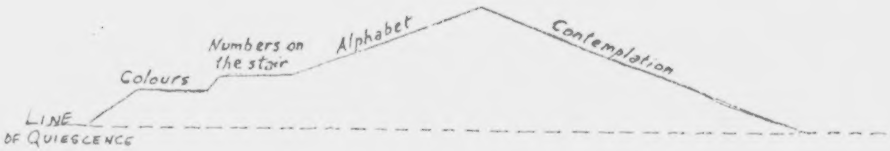


Chart 3 Page 103

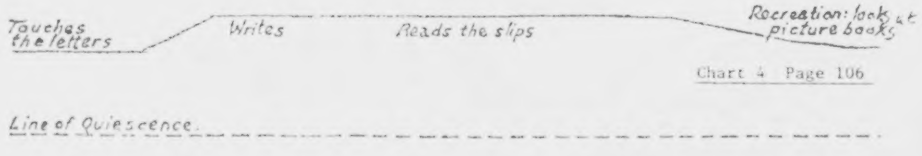
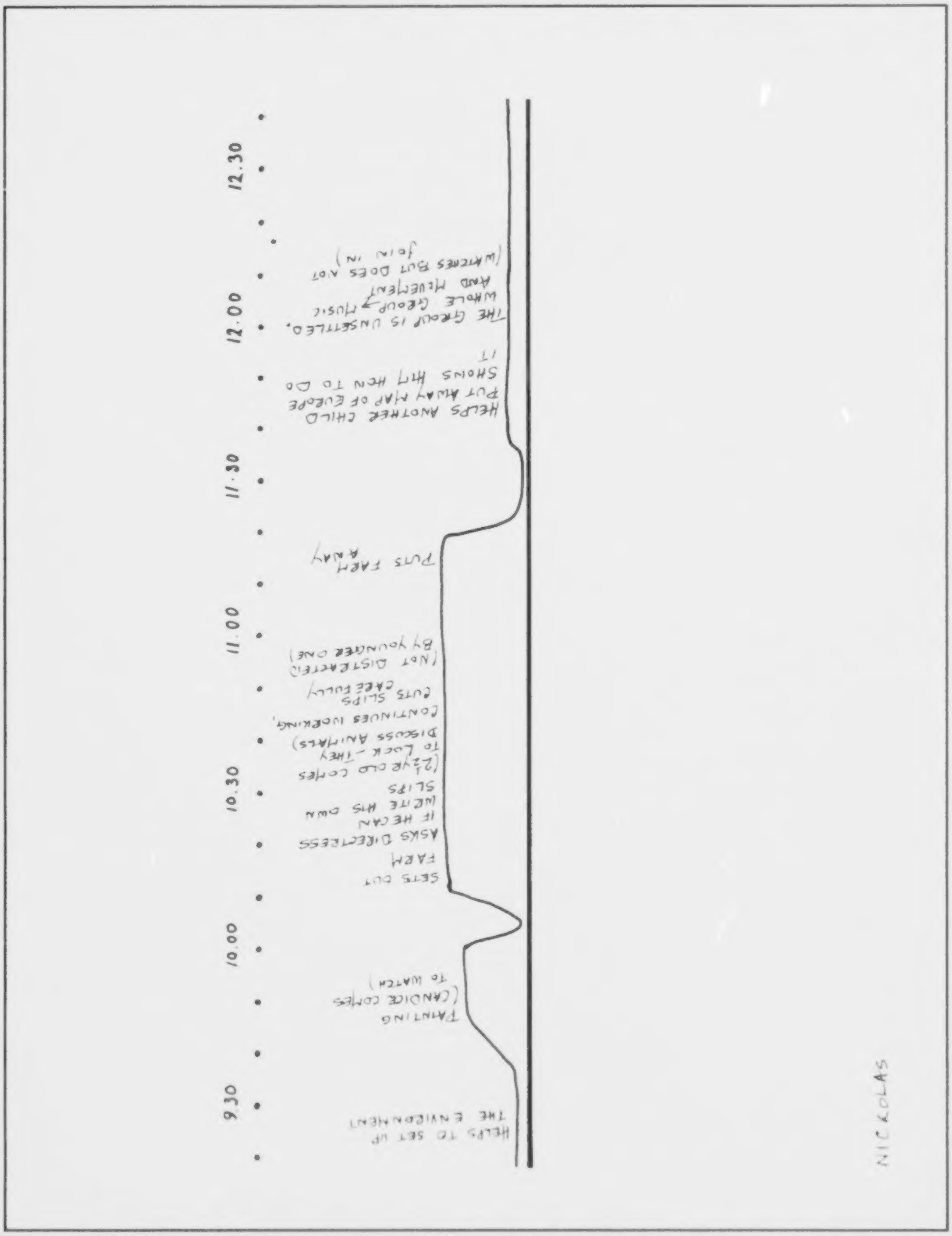


Chart 4 Page 106

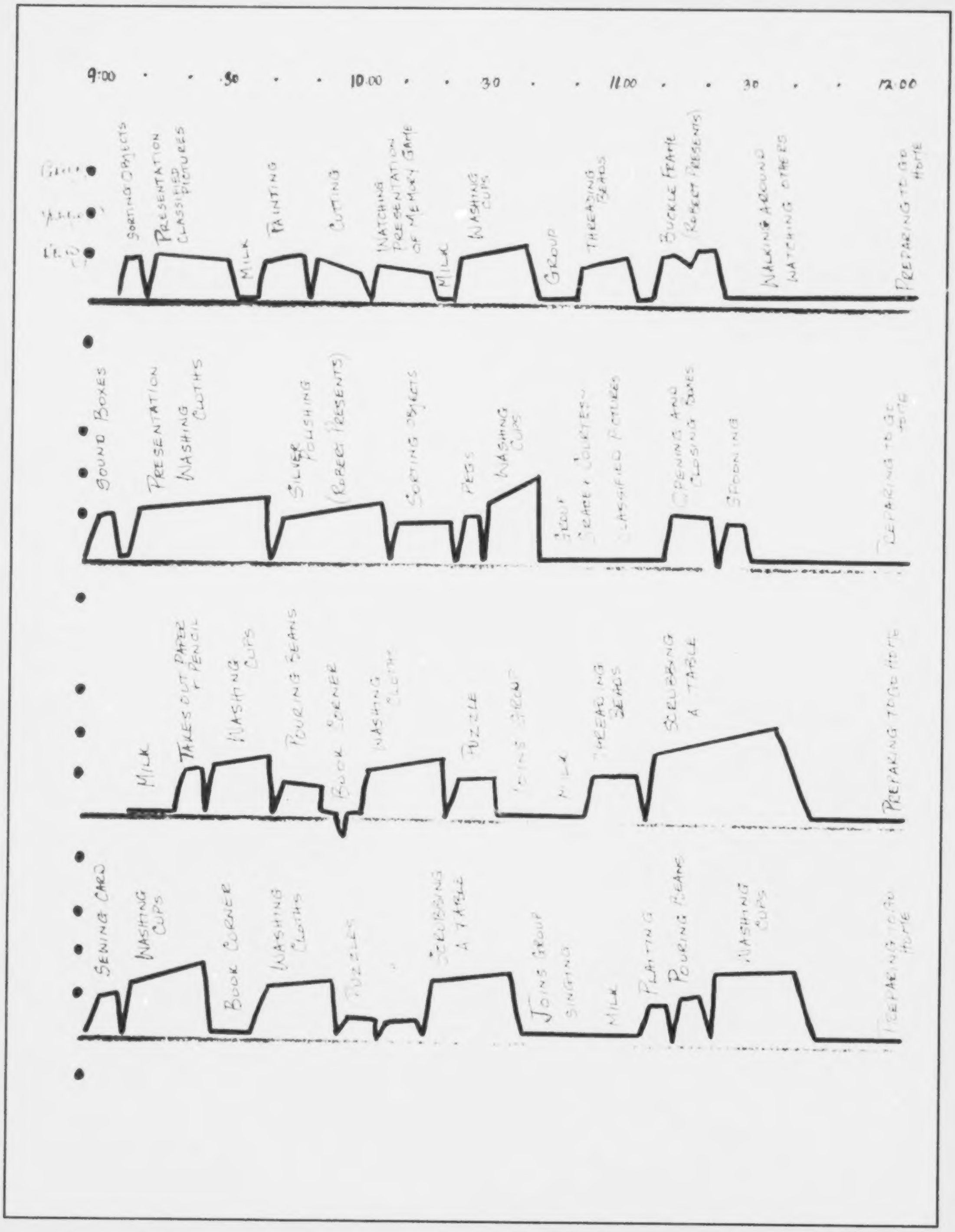
Appendix 14: Work Curve Chart – Nickolas Preschool Classroom, London, England

The Nickolas work curve shows three gradations of activity above the line of quiescence and one gradation below the line of quiescence indicated by dots to the left of the chart. Work curves are kept for all children producing a series over one week in intervals of six weeks if observation is to be done in this particular manner.



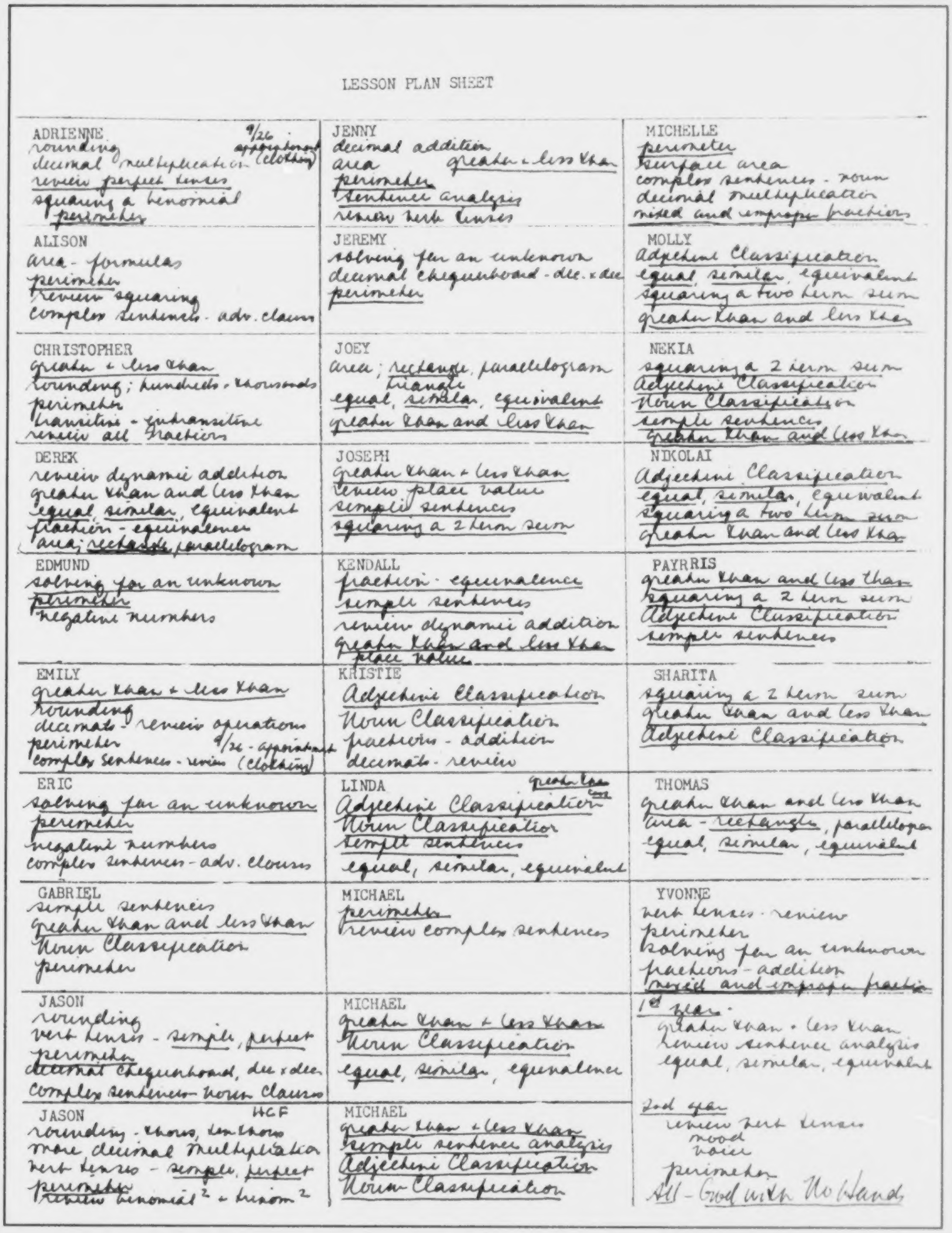
Appendix 15: Work Curve Chart, One Child for One Week – Preschool Classroom, London, England

Patterns of interest, regression and progress are demonstrated as a child's work curves are presented for each day of the week. Critical to a natural work cycle are the three hours of uninterrupted work time.



Appendix 16: Weekly Lesson Plan Sheet, Whole Class — Diane Haldane, Milwaukee Public Schools, Upper Elementary, Milwaukee, Wisconsin

One lesson plan sheet is filled out with individualized lessons for the whole week. This takes about 1.5 hours each weekend. When the lesson is given it is underlined. Children can use this sheet to review their work options. Lessons not given are entered on the weekly plan for the following week. Appendices 16-19 are samples of teacher records kept of students in a Montessori Elementary classroom. **Remember that these exhibits are merely samples of one teacher's development of a suitable recordkeeping system. The thinking and reflection a teacher must undertake to devise and maintain a recordkeeping system is indispensable to her providing a genuine Montessori environment.**

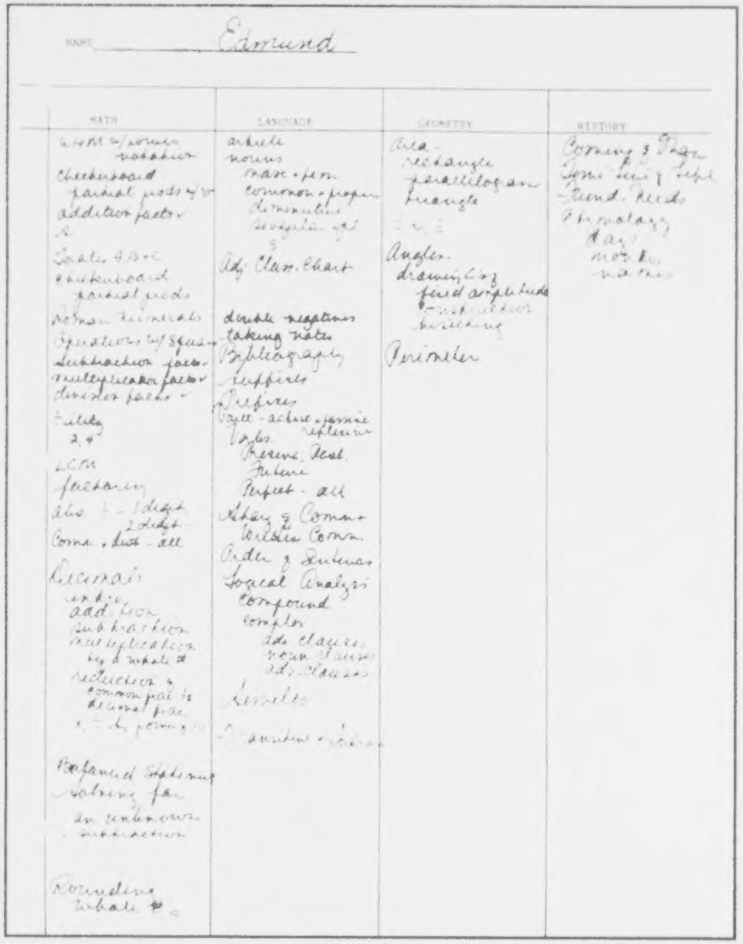


LESSON PLAN SHEET

ADRIENNE 9/26 appointment (clothing) rounding decimal multiplication review perfect tenses squaring a binomial perimeter	JENNY decimal addition area greater + less than perimeter sentence analysis review verb tenses	MICHELLE perimeter surface area complex sentences - noun decimal multiplication mixed and improper fractions
ALISON area - formulas perimeter review squaring complex sentences - adv. clauses	JEREMY solving for an unknown decimal checkerboard - dec. x dec perimeter	MOLLY Adjective Classification equal, similar, equivalent squaring a two term sum greater than and less than
CHRISTOPHER greater + less than rounding; hundreds + thousands perimeter transitive - intransitive review all fractions	JOEY area; rectangle, parallelogram triangle equal, similar, equivalent greater than and less than	NEKIA squaring a 2 term sum Adjective Classification Noun Classification simple sentences greater than and less than
DEREK review dynamic addition greater than and less than equal, similar, equivalent fraction - equivalence area; rectangle, parallelogram	JOSEPH greater than + less than review place value simple sentences squaring a 2 term sum	NIKOLAI Adjective Classification equal, similar, equivalent squaring a two term sum greater than and less than
EDMUND solving for an unknown perimeter negative numbers	KENDALL fraction - equivalence simple sentences review dynamic addition greater than and less than place value	PAYRRIS greater than and less than squaring a 2 term sum Adjective Classification simple sentences
EMILY greater than + less than rounding decimals - review operations perimeter 9/26 - appointment complex sentences - review (clothing)	KRISTIE Adjective Classification Noun Classification fractions - addition decimals - review	SHARITA squaring a 2 term sum greater than and less than Adjective Classification
ERIC solving for an unknown perimeter negative numbers complex sentences - adv. clauses	LINDA greater than less Adjective Classification Noun Classification simple sentences equal, similar, equivalent	THOMAS greater than and less than area - rectangle, parallelogram equal, similar, equivalent
GABRIEL simple sentences greater than and less than Noun Classification perimeter	MICHAEL perimeter review complex sentences	YVONNE verb tenses - review perimeter solving for an unknown fractions - addition mixed and improper fractions
JASON rounding verb tenses - simple, perfect perimeter decimal checkerboard, dec x dec complex sentences - noun clauses	MICHAEL greater than + less than Noun Classification equal, similar, equivalence	1st year: greater than + less than review sentence analysis equal, similar, equivalent
JASON HCF rounding - thous, ten thous more decimal multiplication verb tenses - simple, perfect perimeter review binomial^2 + trinom^2	MICHAEL greater than + less than simple sentence analysis Adjective Classification Noun Classification	2nd year review verb tenses mood voice perimeter All - Good with No Hands

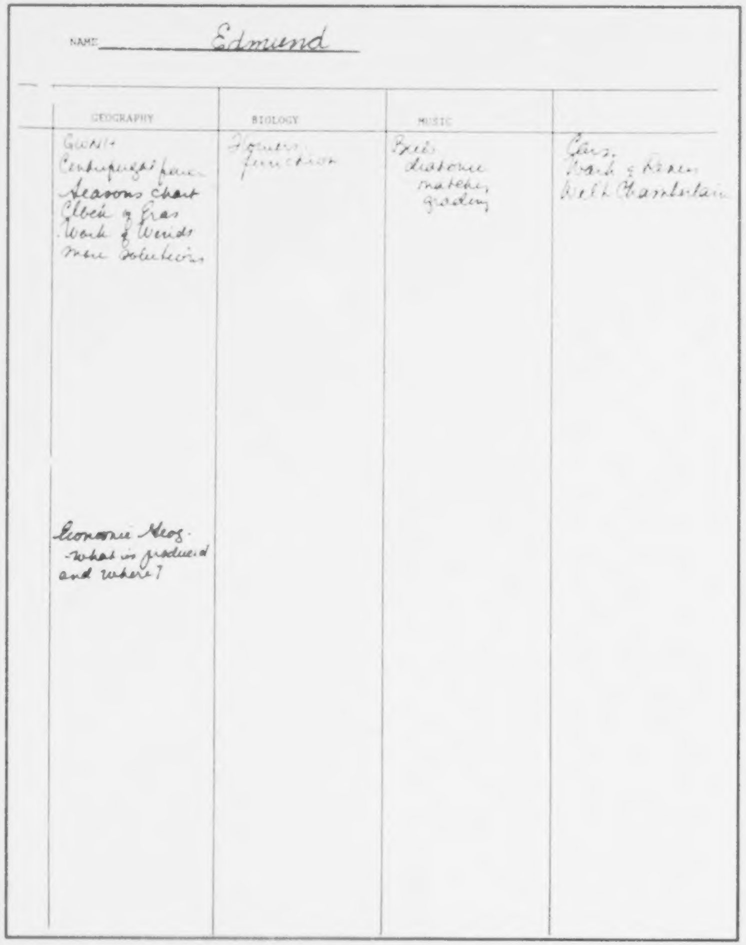
Appendix 17: Record Sheet for One Child — Diane Haldane, Milwaukee Public Schools, Upper Elementary, Milwaukee, Wisconsin

Once the lesson on the weekly lesson plan has been given, it is transferred to the student's record sheet.



NAME Edmund

MATH	LANGUAGE	GEOMETRY	HISTORY
[illegible] w/power notation Checkerboard partial prods w/0 addition facts Tables A B C checkerboard partial prods Roman numerals Operations w/squares subtraction facts multiplication facts division facts Divisibility 2, 4 LCM factoring also 1 digit 2 digit Comm. + dist. - all Decimals [illegible] addition subtraction multiplication by a whole # reduction of common frac to decimal frac [illegible] Balanced Statements solving for an unknown - subtraction Rounding whole #s	article nouns masc + fem. common + proper diminutive [illegible] Adj. Class. Chart double negatives taking notes Bibliography Suffixes Prefixes Verb - active + passive Verbs reflexive Present, Past, Future Perfect - all Story of Comma Within Comm. Order of Sentence Logical Analysis Compound complex adv. clauses noun clauses adj. clauses Riddles [illegible]	Area - rectangle parallelogram triangle [illegible] Angles - drawing of find amplitude [illegible] bisecting Perimeter	Coming of Pagans [illegible] Fund. Needs Chronology days months [illegible]

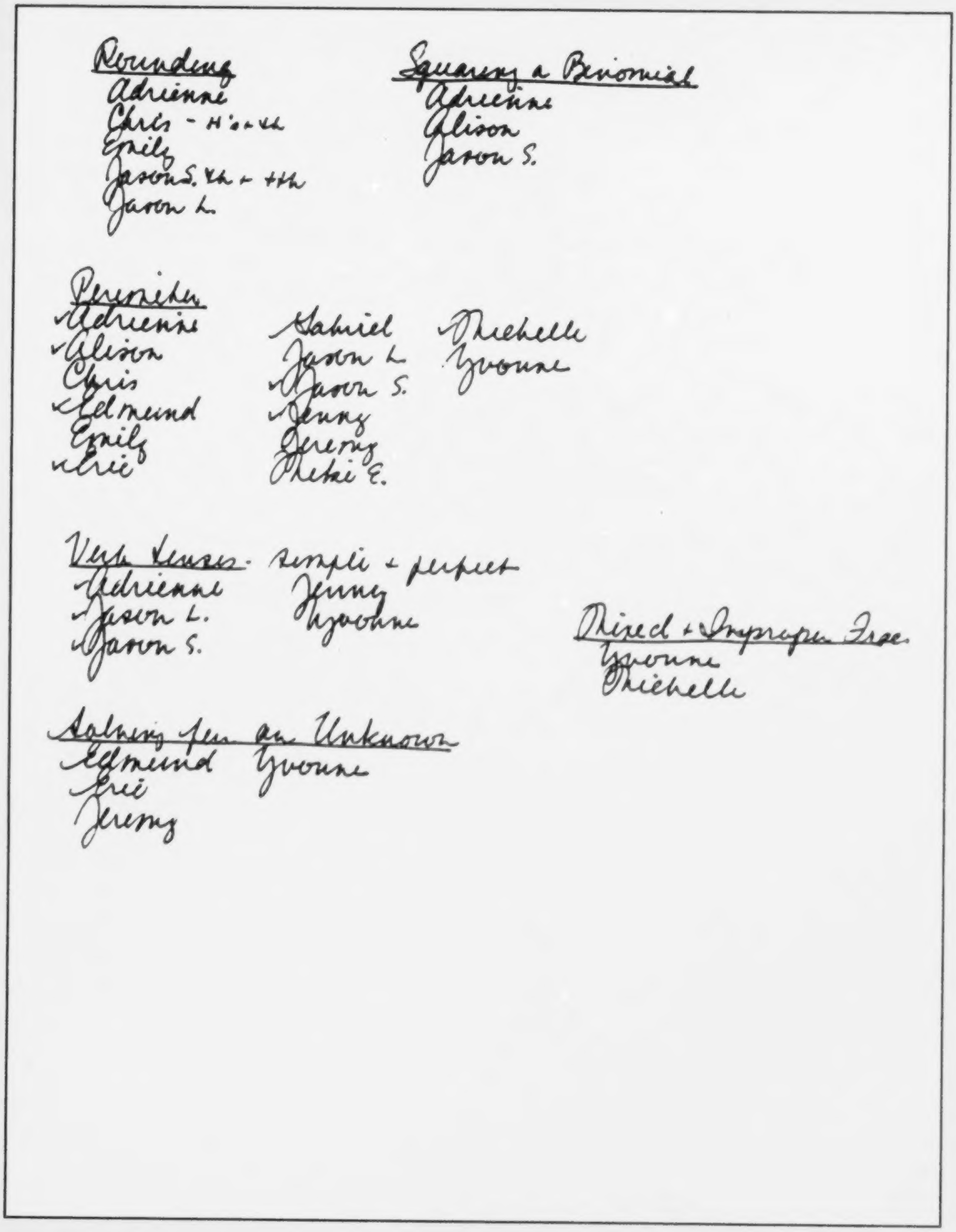


NAME Edmund

GEOGRAPHY	BIOLOGY	MUSIC	
Globe Centrifugal force Seasons chart Clock of Eras Work of Winds [illegible] Solutions Economic Geog. - what is produced and where?	Flowers function	Bells diatonic matching grading	Cars. Work of Rivers Wilt Chamberlain

Appendix 18: Weekly Group Lessons, Whole Class, Derived from the Weekly Lesson Plan Sheet — Diane Haldane, Milwaukee Public Schools Upper Elementary, Milwaukee, Wisconsin

Children who are supposed to receive the same lesson are grouped together for classroom purposes.



Rounding
Adrienne
Chris - H's + th
Emily
Jason S. th + tth
Jason L.

Squaring a Binomial
Adrienne
Alison
Jason S.

Perimeter
✓Adrienne
✓Alison
Chris
✓Edmund
Emily
✓Eric
Gabriel
Jason L.
✓Jason S.
✓Jenny
Jeremy
Nikki E.
✓Michelle
Yvonne

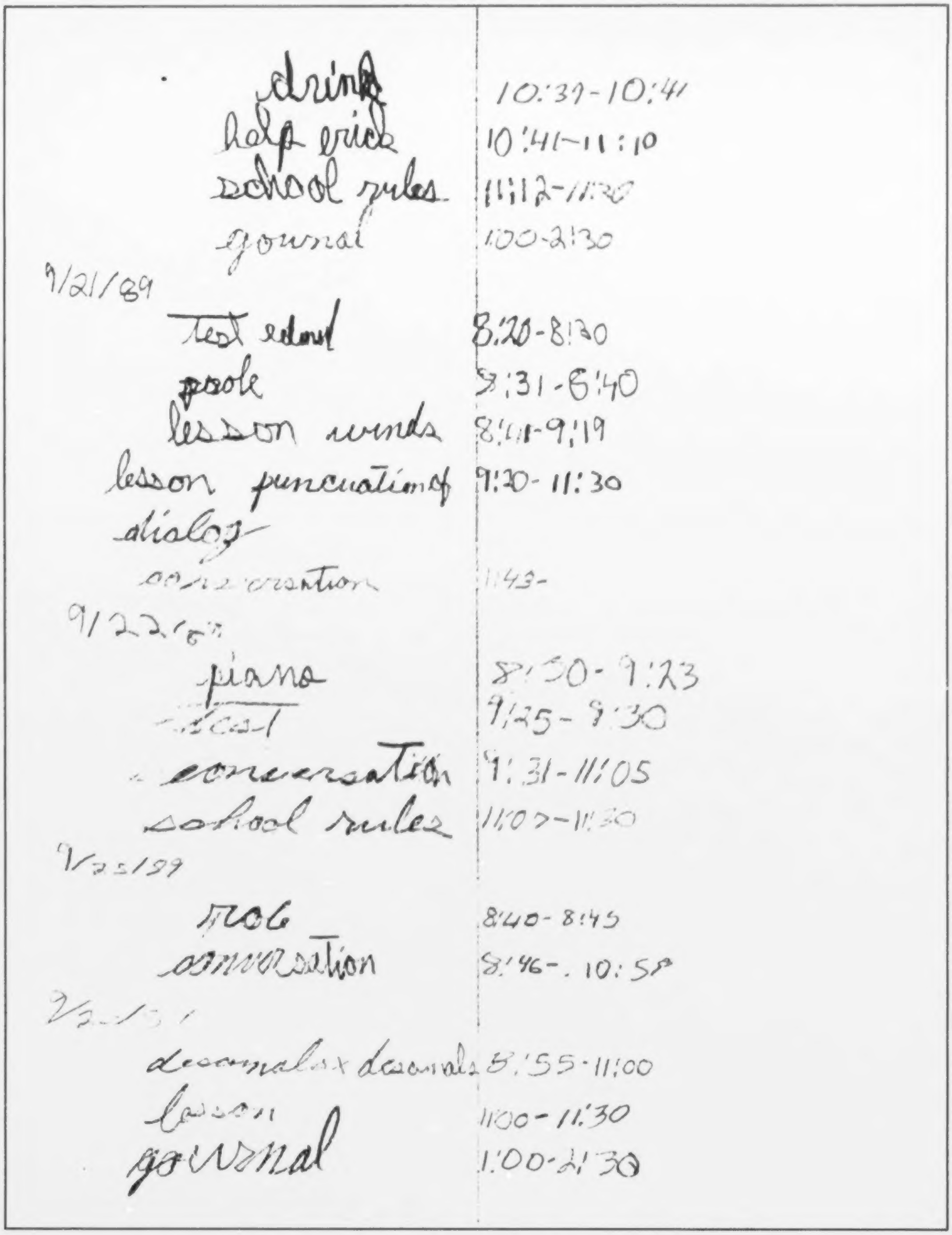
Verb tenses - simple + perfect
✓Adrienne
✓Jason L.
✓Jason S.
Jenny
Yvonne

Mixed + Improper Frac.
Yvonne
Michelle

Solving for an Unknown
Edmund
Eric
Jeremy
Yvonne

Appendix 19: Page from Student Journal — Diane Haldane, Milwaukee Public Schools Upper Elementary, Milwaukee, Wisconsin

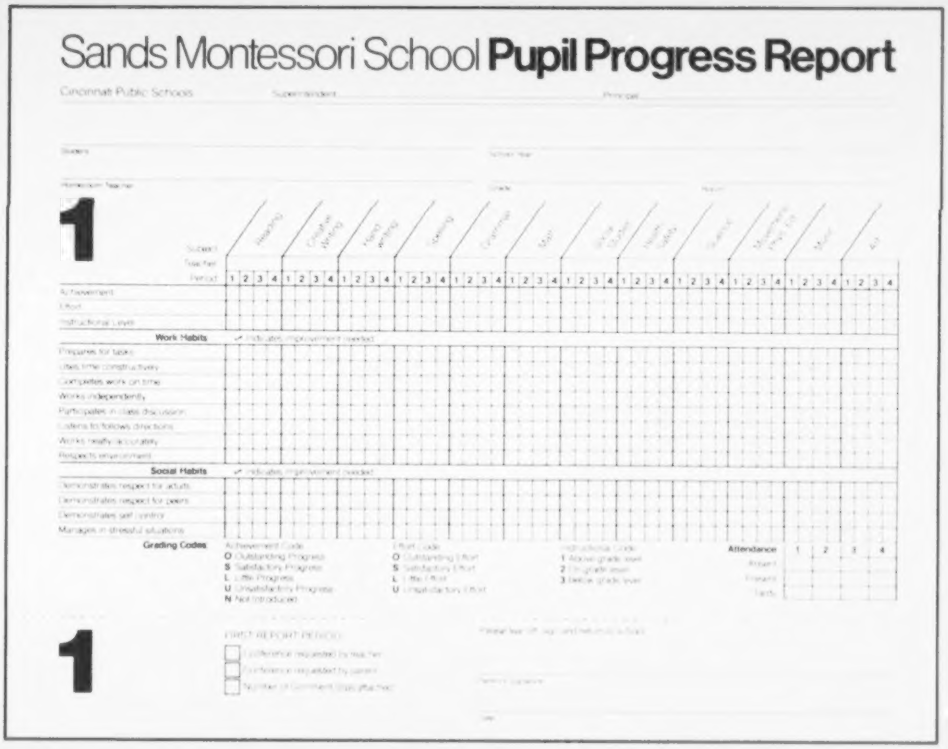
Elementary children are quite capable of tracking their use of time, as indicated by this excerpt.



drink	10:39-10:41
help erick	10:41-11:10
school rules	11:12-11:30
journal	1:00-2:30
9/21/89	
test edend	8:20-8:30
poole	8:31-8:40
lesson words	8:41-9:19
lesson puncuation of dialog	9:20-11:30
conversation	1:43-
9/22/89	
piano	8:50-9:23
test	9:25-9:30
conversation	9:31-11:05
school rules	11:07-11:30
9/25/89	
mob	8:40-8:45
conversation	8:46-10:58
9/2[illegible]	
decimals x decimals	8:55-11:00
lesson	11:00-11:30
journal	1:00-2:30

Appendix 20: Traditional Report Card Used for Montessori Reporting — Sands Montessori School, Cincinnati, Ohio

Using conventional nomenclature, this report card is able to convey the "public school curriculum" utilizing some Montessori concepts, while at the same time maintaining citywide conventions.



Sands Montessori School **Pupil Progress Report**

Cincinnati Public Schools Superintendent Principal

Student School Year

Homeroom Teacher Grade Room

1

Subject	Reading	Creative Writing	Hand writing	Spelling	Grammar	Math	Social Studies	Health Safety	Science	Movement Phys. Ed.	Music	Art
Teacher												
Period	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Achievement												
Effort												
Instructional Level												
Work Habits	✓ Indicates improvement needed											
Prepares for tasks												
Uses time constructively												
Completes work on time												
Works independently												
Participates in class discussion												
Listens to/follows directions												
Works neatly/accurately												
Respects environment												
Social Habits	✓ Indicates improvement needed											
Demonstrates respect for adults												
Demonstrates respect for peers												
Demonstrates self control												
Manages in stressful situations												

Grading Codes

Achievement Code
O Outstanding Progress
S Satisfactory Progress
L Little Progress
U Unsatisfactory Progress
N Not Introduced

Effort Code
O Outstanding Effort
S Satisfactory Effort
L Little Effort
U Unsatisfactory Effort

Instructional Code
1 Above grade level
2 On grade level
3 Below grade level

Attendance	1	2	3	4
Absent				
Present				
Tardy				

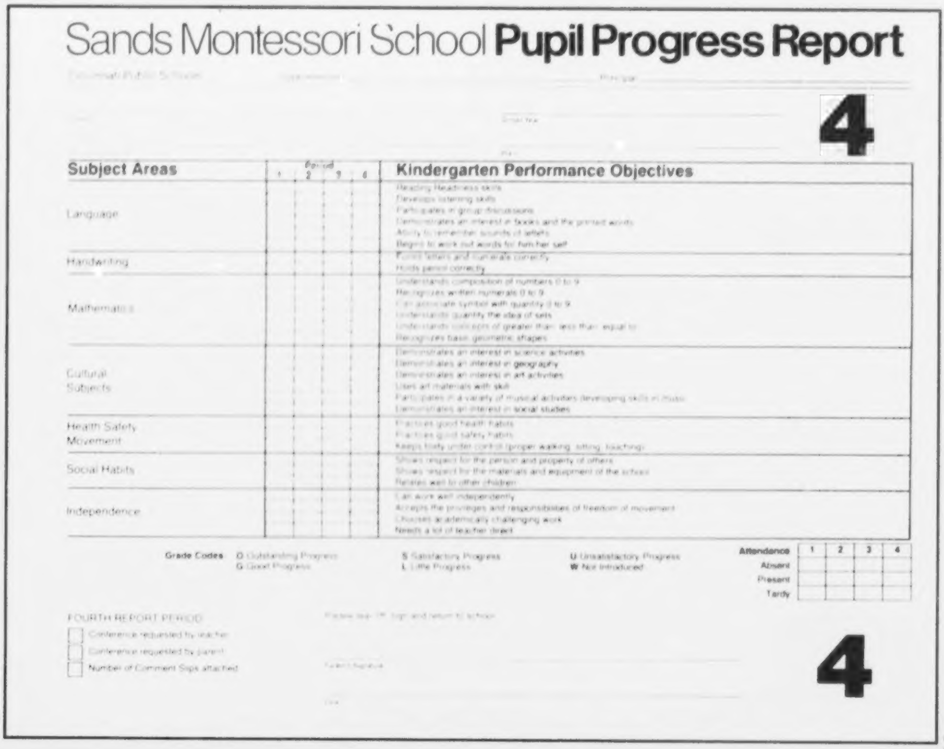
1

FIRST REPORT PERIOD
☐ Conference requested by teacher
☐ Conference requested by parent
☐ Number of Comment Slips attached

Please tear off, sign and return to school

Parent's Signature

Date



Sands Montessori School **Pupil Progress Report**

Cincinnati Public Schools Superintendent Principal

School Year

4

Subject Areas	Period 1	2	3	4	**Kindergarten Performance Objectives**
Language					Reading Readiness skills Develops listening skills Participates in group discussions Demonstrates an interest in books and the printed words Ability to remember sounds of letters Begins to work out words for him/her self
Handwriting					Forms letters and numerals correctly Holds pencil correctly
Mathematics					Understands composition of numbers 0 to 9 Recognizes written numerals 0 to 9 Can associate symbol with quantity 0 to 9 Understands quantity the idea of sets Understands concepts of greater than, less than, equal to Recognizes basic geometric shapes
Cultural Subjects					Demonstrates an interest in science activities Demonstrates an interest in geography Demonstrates an interest in art activities Uses art materials with skill Participates in a variety of musical activities developing skills in music Demonstrates an interest in social studies
Health Safety Movement					Practices good health habits Practices good safety habits Keeps body under control (proper walking, sitting, touching)
Social Habits					Shows respect for the person and property of others Shows respect for the materials and equipment of the school Relates well to other children
Independence					Can work well independently Accepts the privileges and responsibilities of freedom of movement Chooses academically challenging work Needs a lot of teacher direct

Grade Codes **O** Outstanding Progress **G** Good Progress **S** Satisfactory Progress **L** Little Progress **U** Unsatisfactory Progress **W** Not Introduced

Attendance	1	2	3	4
Absent				
Present				
Tardy				

FOURTH REPORT PERIOD
☐ Conference requested by teacher
☐ Conference requested by parent
☐ Number of Comment Slips attached

Please tear off, sign and return to school

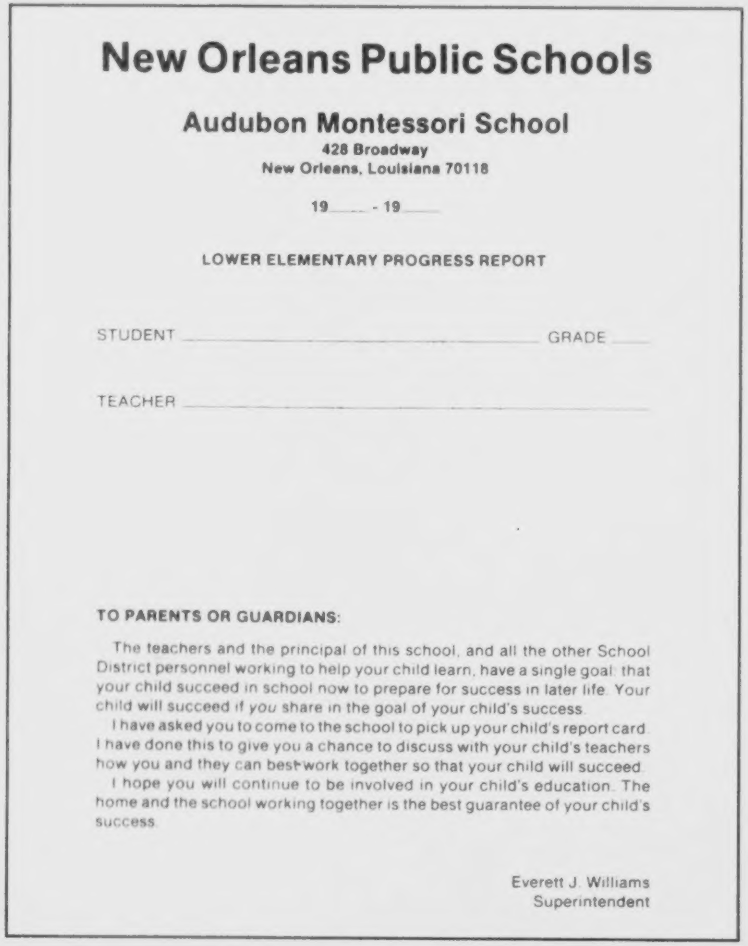
Parent's Signature

Date

4

Appendix 21: Montessori Checklist Report Cards, Lower Elementary and Upper Elementary — Audubon Montessori School, New Orleans, Louisiana

These report cards externalize and summarize internal sequences with the materials. Audubon report cards are derived from a variety of models including the Albanesi tracking sheets.



New Orleans Public Schools

Audubon Montessori School

428 Broadway
New Orleans, Louisiana 70118

19____ - 19____

LOWER ELEMENTARY PROGRESS REPORT

STUDENT ______________________________ GRADE ____

TEACHER ______________________________

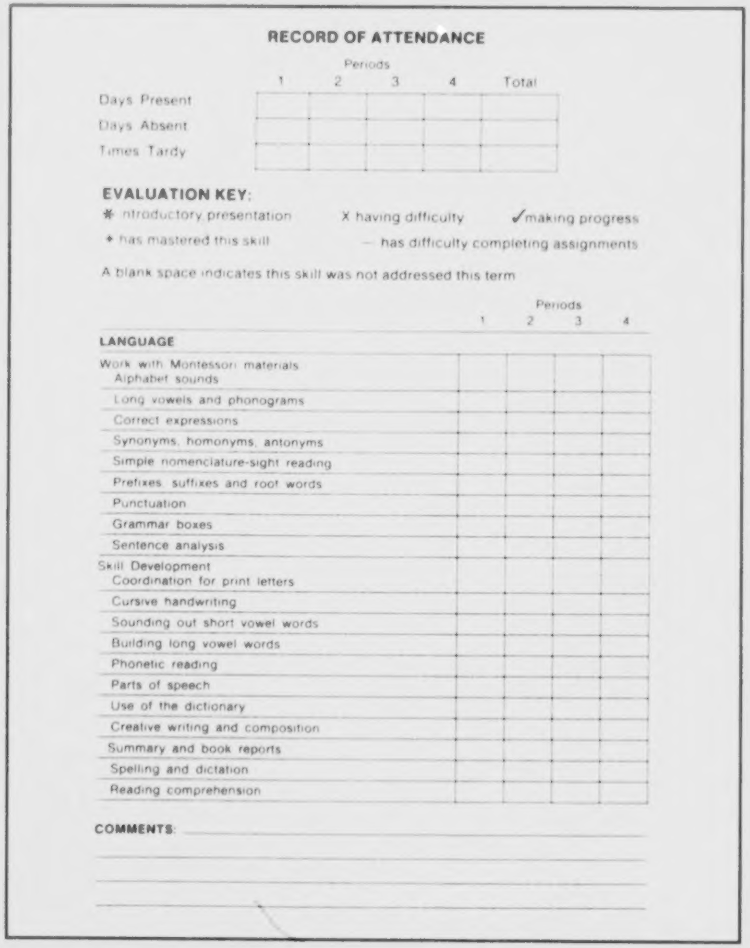
TO PARENTS OR GUARDIANS:

The teachers and the principal of this school, and all the other School District personnel working to help your child learn, have a single goal: that your child succeed in school now to prepare for success in later life. Your child will succeed if *you* share in the goal of your child's success.

I have asked you to come to the school to pick up your child's report card. I have done this to give you a chance to discuss with your child's teachers how you and they can best work together so that your child will succeed.

I hope you will continue to be involved in your child's education. The home and the school working together is the best guarantee of your child's success.

Everett J. Williams
Superintendent



RECORD OF ATTENDANCE

	Periods				
	1	2	3	4	Total
Days Present					
Days Absent					
Times Tardy					

EVALUATION KEY:

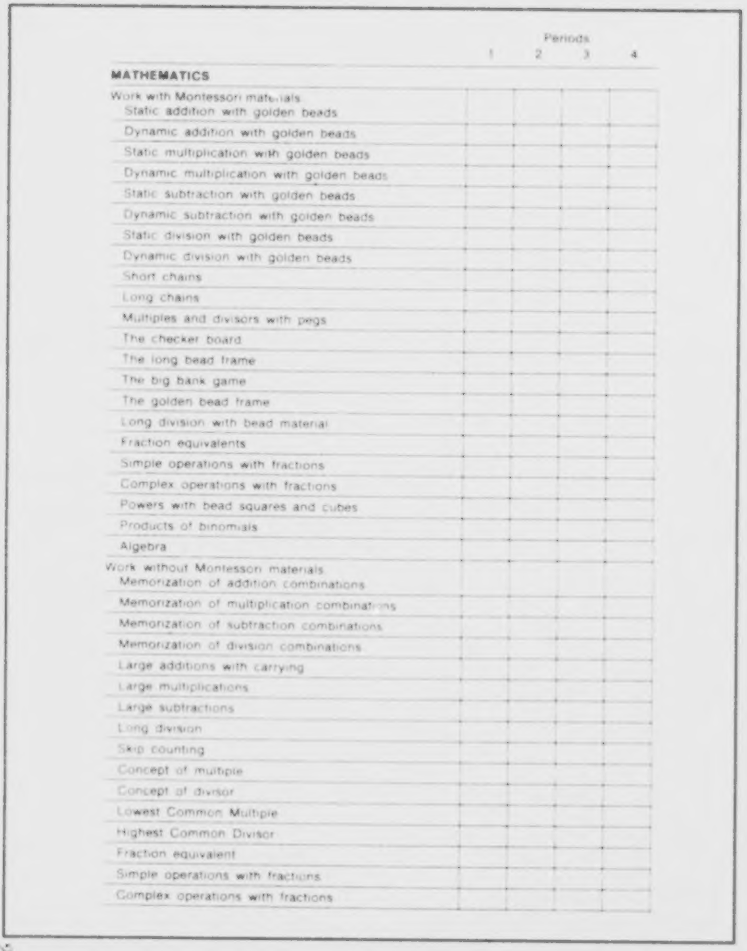
✱ introductory presentation   X having difficulty   ✓making progress

◆ has mastered this skill   — has difficulty completing assignments

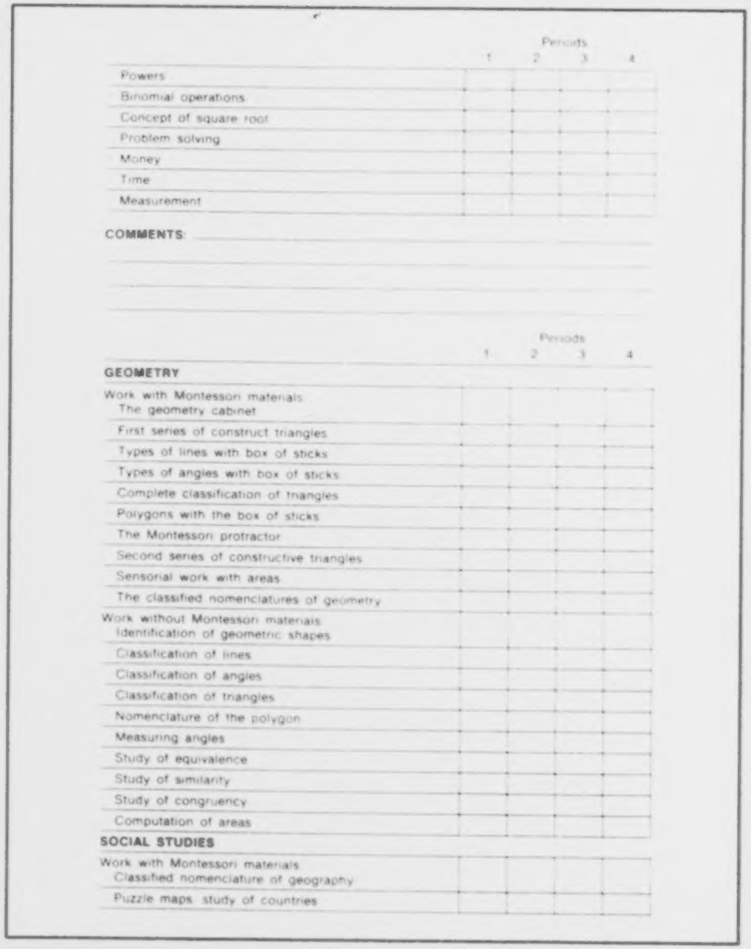
A blank space indicates this skill was not addressed this term

	Periods			
	1	2	3	4
LANGUAGE				
Work with Montessori materials Alphabet sounds				
Long vowels and phonograms				
Correct expressions				
Synonyms, homonyms, antonyms				
Simple nomenclature-sight reading				
Prefixes, suffixes and root words				
Punctuation				
Grammar boxes				
Sentence analysis				
Skill Development Coordination for print letters				
Cursive handwriting				
Sounding out short vowel words				
Building long vowel words				
Phonetic reading				
Parts of speech				
Use of the dictionary				
Creative writing and composition				
Summary and book reports				
Spelling and dictation				
Reading comprehension				

COMMENTS: ______________________________



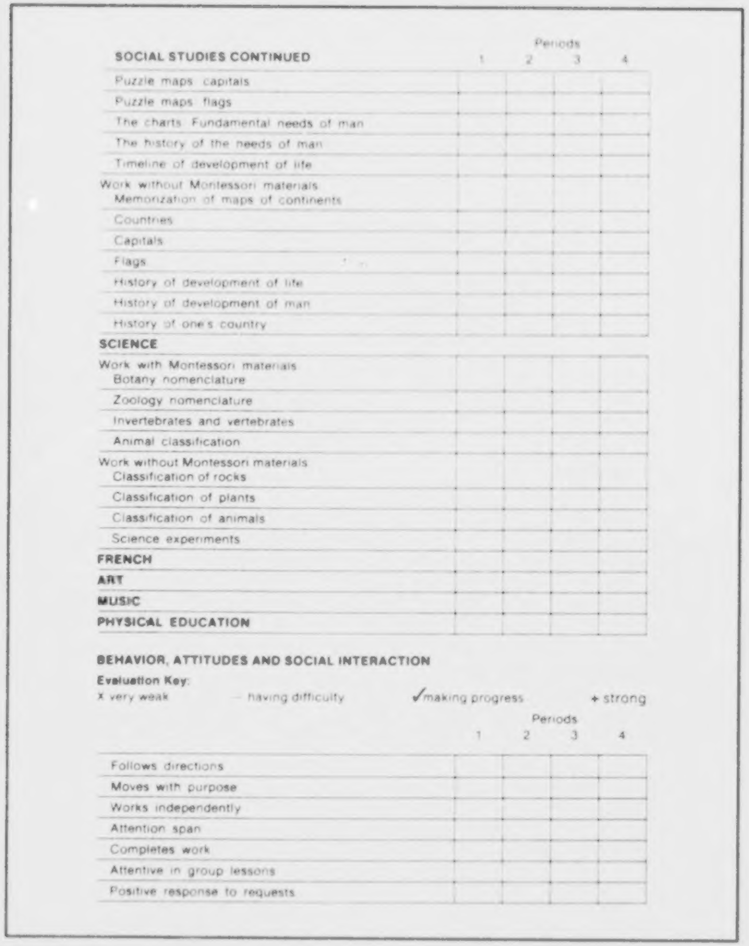
	Periods			
	1	2	3	4
MATHEMATICS				
Work with Montessori materials Static addition with golden beads				
Dynamic addition with golden beads				
Static multiplication with golden beads				
Dynamic multiplication with golden beads				
Static subtraction with golden beads				
Dynamic subtraction with golden beads				
Static division with golden beads				
Dynamic division with golden beads				
Short chains				
Long chains				
Multiples and divisors with pegs				
The checker board				
The long bead frame				
The big bank game				
The golden bead frame				
Long division with bead material				
Fraction equivalents				
Simple operations with fractions				
Complex operations with fractions				
Powers with bead squares and cubes				
Products of binomials				
Algebra				
Work without Montessori materials Memorization of addition combinations				
Memorization of multiplication combinations				
Memorization of subtraction combinations				
Memorization of division combinations				
Large additions with carrying				
Large multiplications				
Large subtractions				
Long division				
Skip counting				
Concept of multiple				
Concept of divisor				
Lowest Common Multiple				
Highest Common Divisor				
Fraction equivalent				
Simple operations with fractions				
Complex operations with fractions				



	Periods			
	1	2	3	4
Powers				
Binomial operations				
Concept of square root				
Problem solving				
Money				
Time				
Measurement				

COMMENTS: ______________________________

	Periods			
	1	2	3	4
GEOMETRY				
Work with Montessori materials The geometry cabinet				
First series of construct triangles				
Types of lines with box of sticks				
Types of angles with box of sticks				
Complete classification of triangles				
Polygons with the box of sticks				
The Montessori protractor				
Second series of constructive triangles				
Sensorial work with areas				
The classified nomenclatures of geometry				
Work without Montessori materials Identification of geometric shapes				
Classification of lines				
Classification of angles				
Classification of triangles				
Nomenclature of the polygon				
Measuring angles				
Study of equivalence				
Study of similarity				
Study of congruency				
Computation of areas				
SOCIAL STUDIES				
Work with Montessori materials Classified nomenclature of geography				
Puzzle maps study of countries				



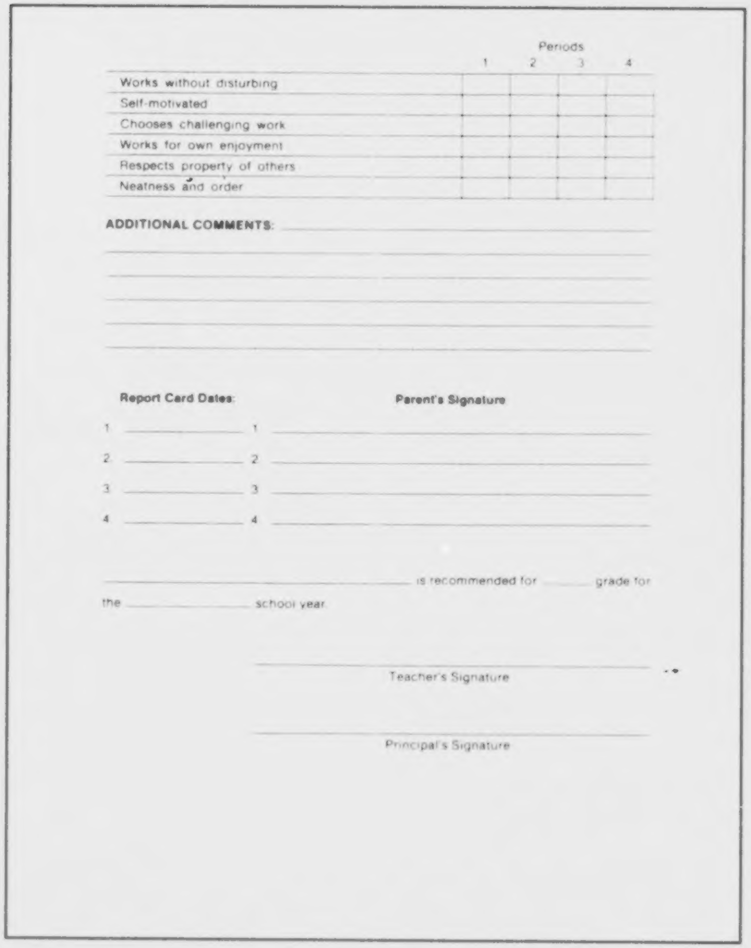
SOCIAL STUDIES CONTINUED	Periods			
	1	2	3	4
Puzzle maps capitals				
Puzzle maps flags				
The charts Fundamental needs of man				
The history of the needs of man				
Timeline of development of life				
Work without Montessori materials Memorization of maps of continents				
Countries				
Capitals				
Flags				
History of development of life				
History of development of man				
History of one's country				
SCIENCE				
Work with Montessori materials Botany nomenclature				
Zoology nomenclature				
Invertebrates and vertebrates				
Animal classification				
Work without Montessori materials Classification of rocks				
Classification of plants				
Classification of animals				
Science experiments				
FRENCH				
ART				
MUSIC				
PHYSICAL EDUCATION				

BEHAVIOR, ATTITUDES AND SOCIAL INTERACTION

Evaluation Key:

X very weak — having difficulty ✓making progress + strong

	Periods			
	1	2	3	4
Follows directions				
Moves with purpose				
Works independently				
Attention span				
Completes work				
Attentive in group lessons				
Positive response to requests				



	Periods			
	1	2	3	4
Works without disturbing				
Self-motivated				
Chooses challenging work				
Works for own enjoyment				
Respects property of others				
Neatness and order				

ADDITIONAL COMMENTS: ____________________

Report Card Dates:	**Parent's Signature**
1 ________	1 ____________________
2 ________	2 ____________________
3 ________	3 ____________________
4 ________	4 ____________________

____________________ is recommended for ______ grade for the ____________ school year.

____
Teacher's Signature

____
Principal's Signature

New Orleans Public Schools

Audubon Montessori School

428 Broadway
New Orleans, Louisiana 70118

19____ - 19____

UPPER ELEMENTARY PROGRESS REPORT

STUDENT ____________________________ GRADE ____

TEACHER ____________________________________

TO PARENTS OR GUARDIANS:

The teachers and the principal of this school, and all the other School District personnel working to help your child learn, have a single goal: that your child succeed in school now to prepare for success in later life. Your child will succeed if you share in the goal of your child's success.

I have asked you to come to the school to pick up your child's report card. I have done this to give you a chance to discuss with your child's teachers how you and they can best work together so that your child will succeed.

I hope you will continue to be involved in your child's education. The home and the school working together is the best guarantee of your child's success.

Everett J. Williams
Superintendent

RECORD OF ATTENDANCE

	Periods 1	2	3	4	Total
Days Present					
Days Absent					
Times Tardy					

EVALUATION KEY:

- ✱ introductory presentation
- X having difficulty
- ✓ making progress
- ✦ has mastered this skill
- — has difficulty completing assignments

A blank space indicates this skill was not addressed this term

	Periods 1	2	3	4
LANGUAGE				
Work with Montessori materials Word study				
Exercises of logical agreement				
Grammar analysis with grammar boxes				
Sentence analysis				
Skill Development Handwriting				
Dictionary				
Composition				
Punctuation				
Spelling				
Parts of speech				
Diagramming				
Reading				

COMMENTS: ____________________________________

MATHEMATICS

Work with Montessori materials Addition				
Multiplication				
Subtraction				

	Periods			
	1	2	3	4
Division				
Multiples and factors				
Prime Numbers				
Fraction Equivalences				
Operations with fractions				
Complex operations with fractions				
Binomials and Polynomials				
Study of powers with beads				
Square root with golden beads				
Square root with pegs				
Study of decimals				
The metric system				
Algebra				
Trigonometry				
Calculus				
Work without Montesorri materials Addition with carrying				
Multiplication with carrying				
Subtraction with borrowing				
Long division with one digit				
Long division with two digits				
Long division with three digits				
Lowest common multiple				
Highest common divisor				
Fraction equivalences				
Operations with fractions				
Binomials and Polynomials				
Computation of powers				
Square root				
Algebraic equations				
Decimals				
Cubing				
Computation of percentage				
Computation of average				
Ratio and proportions				
Problem Solving				

COMMENTS:

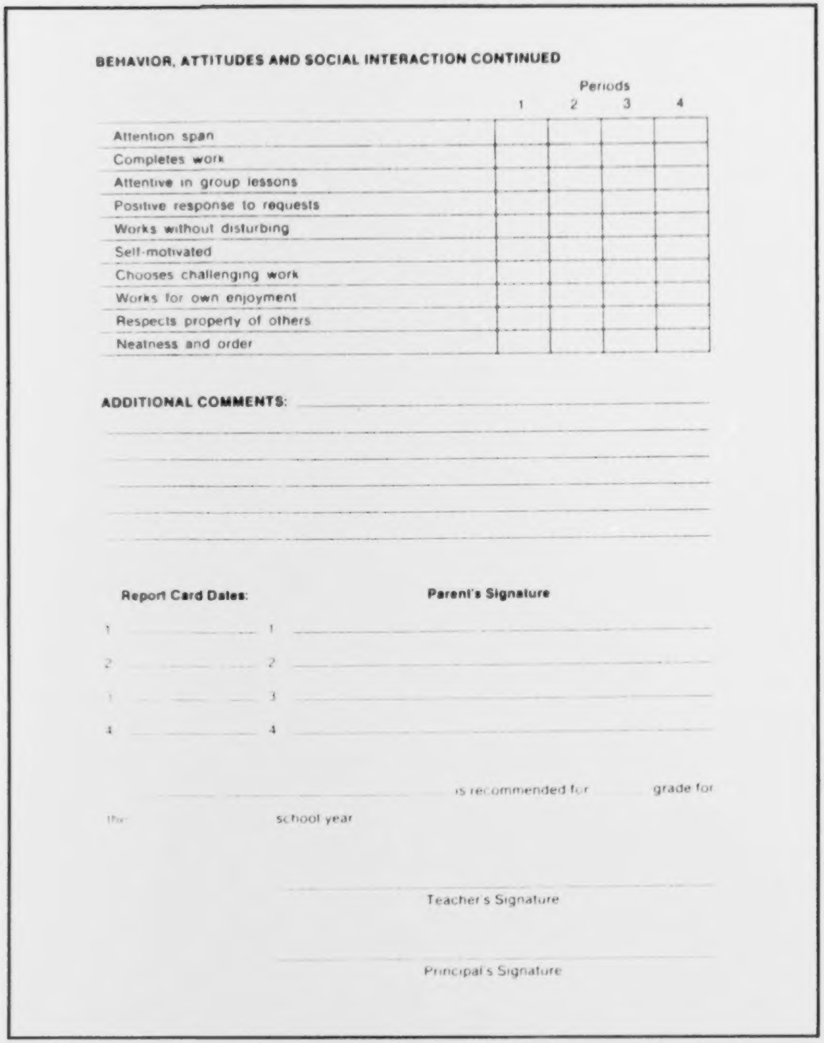
	Periods			
	1	2	3	4
GEOMETRY				
Work with Montessori materials Protractor				
Study of perimeters				
Second series of constructive triangles				
Theorems of Pythagoras and Euclid				
Box of small cubes				
Yellow material for the study of volume				
Work without Montessori Materials Measuring angles				
Construction of figures with a compass				
Study of equivalence				
Study of similarity				
Study of congruency				
SOCIAL STUDIES				
Work with Montessori materials Geography cabinet				
Classified nomenclature of geography				
Timeline of life history				
Timeline of man's history				
Timeline of civilizations				
History of one's country				
History of one's state				
Socio-economic geography				
SCIENCE				
Botany				
Zoology				
Physics				
Scientific inquiry				
FRENCH				
ART				
MUSIC				
PHYSICAL EDUCATION				

BEHAVIOR, ATTITUDES AND SOCIAL INTERACTION

Evaluation Key:

X very weak — having difficulty ✓ making progress + strong

	Periods			
	1	2	3	4
Follows directions				
Moves with purpose				
Works independently				



BEHAVIOR, ATTITUDES AND SOCIAL INTERACTION CONTINUED

	Periods 1	2	3	4
Attention span				
Completes work				
Attentive in group lessons				
Positive response to requests				
Works without disturbing				
Self-motivated				
Chooses challenging work				
Works for own enjoyment				
Respects property of others				
Neatness and order				

ADDITIONAL COMMENTS: ______________________________

Report Card Dates:	**Parent's Signature**
1 ____________	1 ______________________
2 ____________	2 ______________________
3 ____________	3 ______________________
4 ____________	4 ______________________

______________________ is recommended for ________ grade for

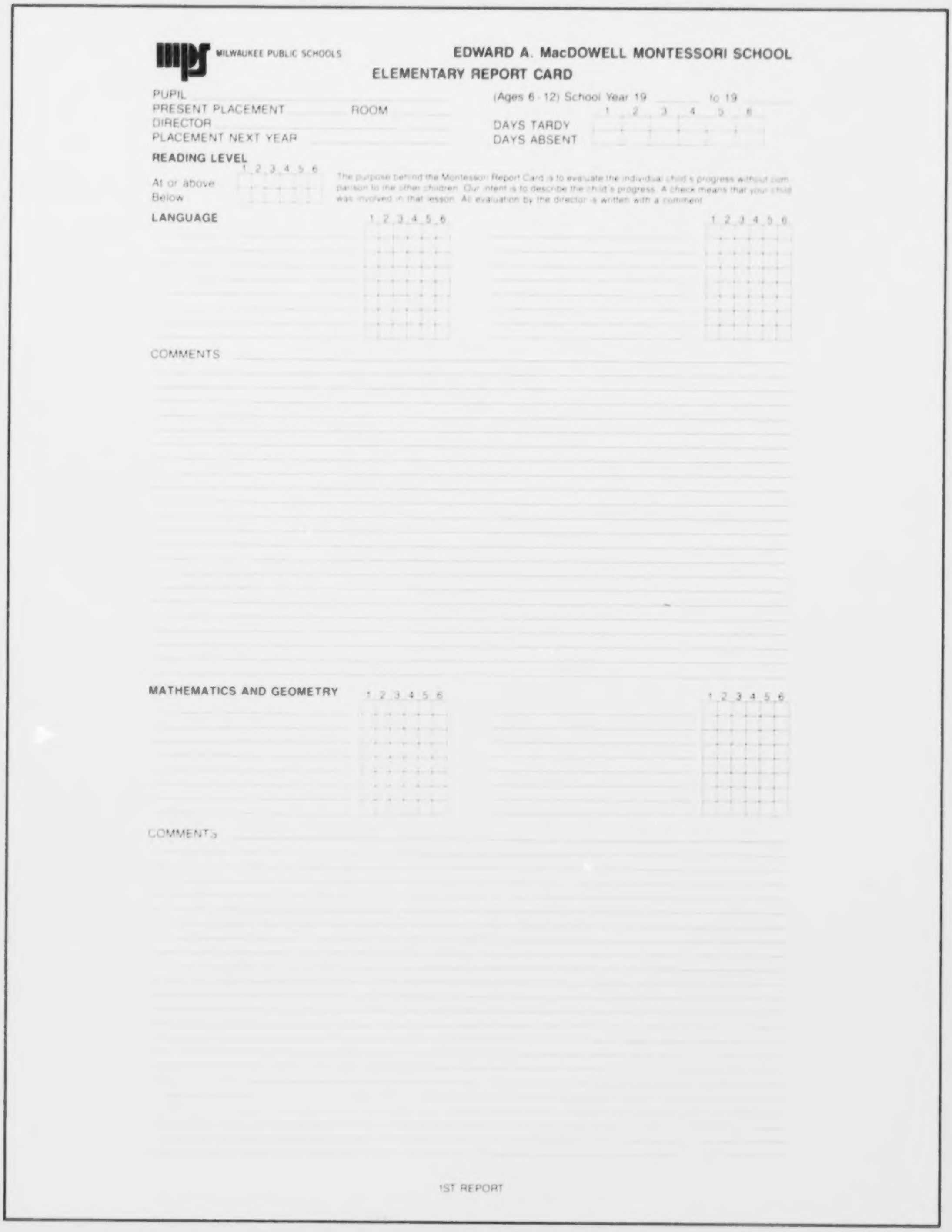
the ____________ school year

____
Teacher's Signature

____
Principal's Signature

Appendix 22: Blank Report Card – McDowell Montessori School, Milwaukee, Wisconsin

This elementary report card allows the teacher to list only the sequential materials which the child is using during the current grading period. There is also space for anecdotal reporting.



MILWAUKEE PUBLIC SCHOOLS

EDWARD A. MacDOWELL MONTESSORI SCHOOL
ELEMENTARY REPORT CARD

PUPIL
PRESENT PLACEMENT ROOM
DIRECTOR
PLACEMENT NEXT YEAR

(Ages 6 - 12) School Year 19 to 19

	1	2	3	4	5	6
DAYS TARDY						
DAYS ABSENT						

READING LEVEL

	1	2	3	4	5	6
At or above						
Below						

The purpose behind the Montessori Report Card is to evaluate the individual child's progress without comparison to the other children. Our intent is to describe the child's progress. A check means that your child was involved in that lesson. All evaluation by the director is written with a comment.

LANGUAGE

1 2 3 4 5 6

1 2 3 4 5 6

COMMENTS

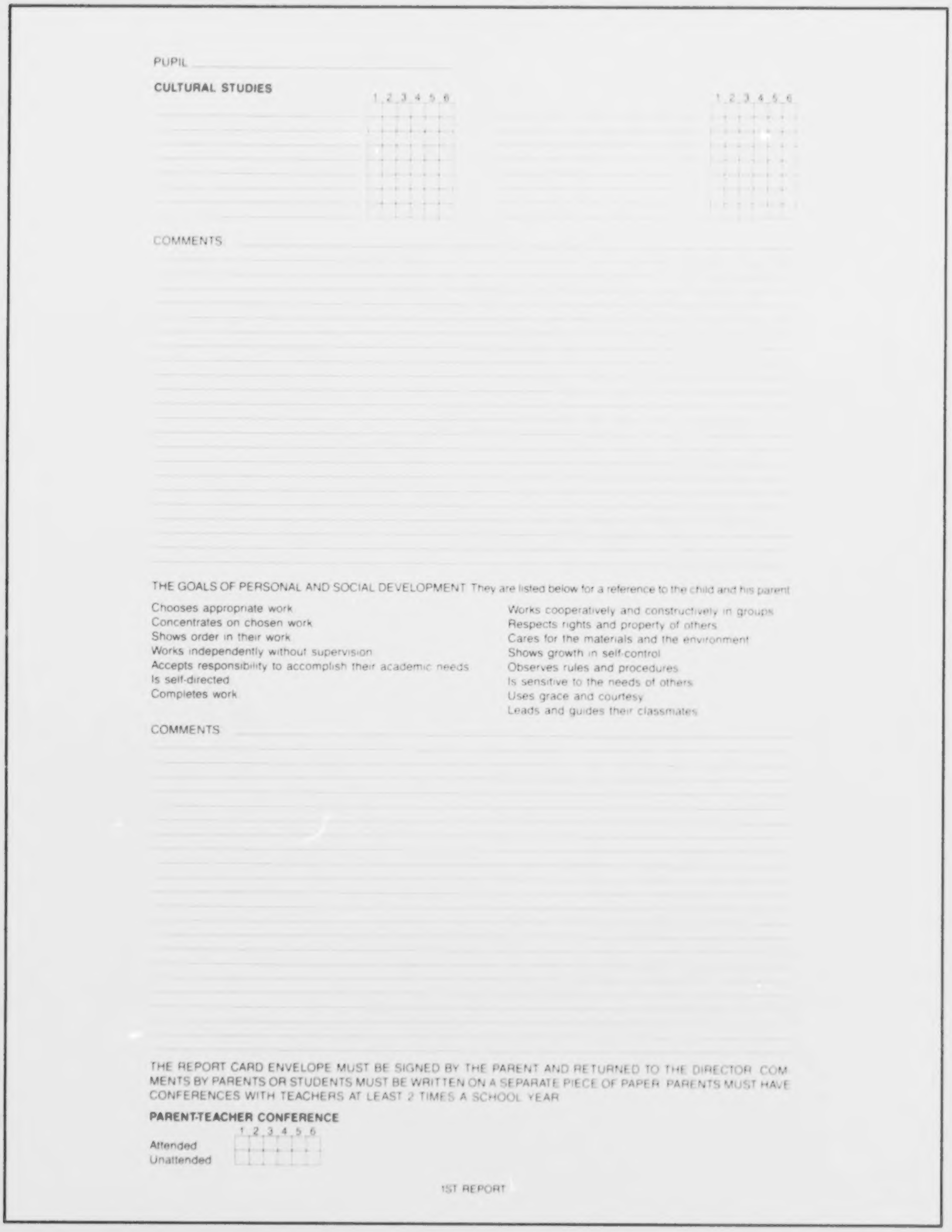
MATHEMATICS AND GEOMETRY

1 2 3 4 5 6

1 2 3 4 5 6

COMMENTS

1ST REPORT



PUPIL

CULTURAL STUDIES

1 2 3 4 5 6

1 2 3 4 5 6

COMMENTS

THE GOALS OF PERSONAL AND SOCIAL DEVELOPMENT They are listed below for a reference to the child and his parent

- Chooses appropriate work
- Concentrates on chosen work
- Shows order in their work
- Works independently without supervision
- Accepts responsibility to accomplish their academic needs
- Is self-directed
- Completes work
- Works cooperatively and constructively in groups
- Respects rights and property of others
- Cares for the materials and the environment
- Shows growth in self-control
- Observes rules and procedures
- Is sensitive to the needs of others
- Uses grace and courtesy
- Leads and guides their classmates

COMMENTS

THE REPORT CARD ENVELOPE MUST BE SIGNED BY THE PARENT AND RETURNED TO THE DIRECTOR COMMENTS BY PARENTS OR STUDENTS MUST BE WRITTEN ON A SEPARATE PIECE OF PAPER PARENTS MUST HAVE CONFERENCES WITH TEACHERS AT LEAST 2 TIMES A SCHOOL YEAR

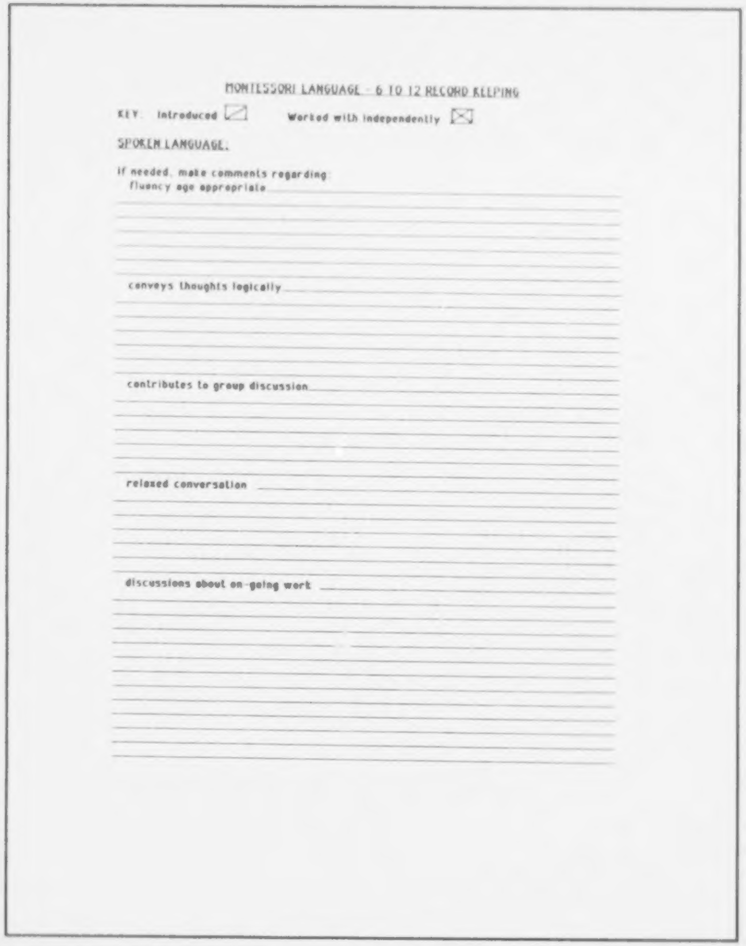
PARENT-TEACHER CONFERENCE

	1	2	3	4	5	6
Attended						
Unattended						

1ST REPORT

Appendix 23: Language and Math Record Keeping Documents For the Elementary – Milwaukee Public Schools

Note that this document indicates only whether the material has been introduced and worked with independently. No "mastery" level is indicated to avoid misconceptions, especially in terms of students retaining what they know.



MONTESSORI LANGUAGE - 6 TO 12 RECORD KEEPING

KEY: Introduced ⧄ Worked with independently ☒

SPOKEN LANGUAGE:

If needed, make comments regarding:

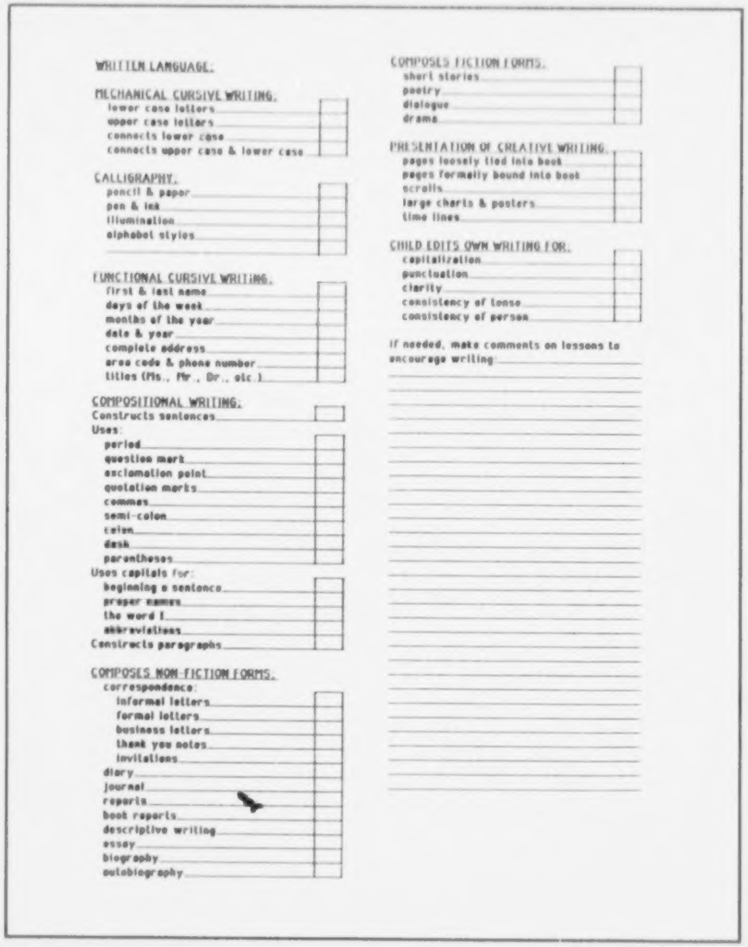
fluency age appropriate ____

conveys thoughts logically ____

contributes to group discussion ____

relaxed conversation ____

discussions about on-going work ____



WRITTEN LANGUAGE:

MECHANICAL CURSIVE WRITING:
- lower case letters ☐
- upper case letters ☐
- connects lower case ☐
- connects upper case & lower case ☐

CALLIGRAPHY:
- pencil & paper ☐
- pen & ink ☐
- illumination ☐
- alphabet styles ☐
- ____ ☐

FUNCTIONAL CURSIVE WRITING:
- first & last name ☐
- days of the week ☐
- months of the year ☐
- date & year ☐
- complete address ☐
- area code & phone number ☐
- titles (Ms., Mr., Dr., etc.) ☐

COMPOSITIONAL WRITING:

Constructs sentences ☐

Uses:
- period ☐
- question mark ☐
- exclamation point ☐
- quotation marks ☐
- commas ☐
- semi-colon ☐
- colon ☐
- dash ☐
- parentheses ☐

Uses capitals for:
- beginning a sentence ☐
- proper names ☐
- the word I ☐
- abbreviations ☐

Constructs paragraphs ☐

COMPOSES NON-FICTION FORMS:
- correspondence:
  - informal letters ☐
  - formal letters ☐
  - business letters ☐
  - thank you notes ☐
  - invitations ☐
- diary ☐
- journal ☐
- reports ☐
- book reports ☐
- descriptive writing ☐
- essay ☐
- biography ☐
- autobiography ☐

COMPOSES FICTION FORMS:
- short stories ☐
- poetry ☐
- dialogue ☐
- drama ☐

PRESENTATION OF CREATIVE WRITING:
- pages loosely tied into book ☐
- pages formally bound into book ☐
- scrolls ☐
- large charts & posters ☐
- time lines ☐

CHILD EDITS OWN WRITING FOR:
- capitalization ☐
- punctuation ☐
- clarity ☐
- consistency of tense ☐
- consistency of person ☐

If needed, make comments on lessons to encourage writing: ____

READING:

THE READING OF WORDS.

Phonetic words ☐
Non phonetic words
  puzzle words ☐
  phonograms

	booklets	cards	in text.
ai (a-e, ay, ei)			
ee (ea, e-e, y, ie)			
ie (y, i-e, igh)			
oa (oe, ow, o-e)			
ue (ew, oo, u-e)			
au (aw, ough)			
er (ur, ir)			
ou (ow)			
oy (oi)			
j (ge, gi)			
s (ce, ci)			
f (ph)			
e (ea)			
or			
ar			
oo			
sh, th, ch			
qu			

WORD STUDY.

	identifies	uses	researches.
Affixes:			
suffixes			
prefixes			
Compound words			
Possessives			
Contractions			
Word families			
Synonyms			
Antonyms			
Homonyms			
Abbreviations			
Spelling rules			
Syllabication rules			

COMMANDS.

One word verb commands ☐
Sentences:
  one action ☐
  two actions ☐
  3 or more actions ☐

INTERPRETIVE READING.

Sentences ☐
Paragraphs ☐
Dialogues ☐
Poetry ☐
Dramatic productions ☐

SPEECH.

Oral reports

Debates/forensics

Reads aloud fluently and with expression

THE READING OF BOOKS.

Non fiction:
  articles ☐
  chapters ☐
  biographies ☐
Comment on level & interest

Fiction
  short stories ☐
  drama ☐
  novels ☐
  poetry ☐
  science fiction ☐
  myths ☐
  legends ☐
  folk tales ☐
  fairy tales ☐
Comment on level & interest

STORY GRAMMAR.

Introduced to elements of story grammar ☐
Recognizes elements of story grammar ☐
Predicts events in story ☐
"Maps" a story ☐
Writes stories using elements of story grammar ☐

READING OF PARAGRAPHS. (identifies)

  main idea ☐
  topic sentence ☐
  supporting details ☐

LITERARY PHRASES.

  idioms ☐
  colloquialisms ☐
  metaphores ☐
  similies ☐

GRAMMAR BOXES.

NOUNS.

Noun introduction ☐
Article-noun ☐
  filler box ☐
  symbolizes in writings ☐
Definite & ind articles ☐
Singular-plural
  e - s ☐
  sh, ch, z, x, ss - es ☐
  o - s ☐
  o - es ☐
  f - ves ☐
  fe - ves ☐
  f,ff - s ☐
  y - ies ☐
  y - s ☐
  -en, ren ☐
  internal change ☐
  identical ☐
  compound words:
    - s to last ☐
    - s to first ☐
Gender ☐
Diminutive ☐
Singular, plural, gender ☐
Classification of nouns:
  common-proper ☐
  concrete-abstract ☐
  material-collective ☐
  quality-state-action ☐
  noun classification chart ☐

ADJECTIVES.

  introduction (GB III A) ☐
  filler boxes ☐
  commands ☐
  symbolizes in writings ☐
  positive/comparative/superlative (filler boxes F, G) ☐
  possessive ☐
  quantitative ☐
  interrogative ☐
  demonstrative ☐
  qualitative ☐
  classification chart ☐
  patterns ☐

VERBS.

  introduction (GB IV A) ☐
  filler boxes ☐
  commands ☐
  symbolizes in writings ☐
  patterns ☐

PREPOSITIONS.

  introduction (GB V A) ☐
  filler boxes ☐
  commands ☐
  symbolizes in writings ☐
  patterns ☐

ADVERBS.

  introduction (GB VI A) ☐
  filler boxes ☐
  commands ☐
  symbolizes in writings ☐
  types ☐
  uses ☐
  patterns ☐

PRONOUNS.

  introduction (GB VII A) ☐
  filler boxes ☐
  personal pronoun 1, 2, 3 ☐
  commands ☐
  symbolizes in writings ☐
  types ☐
  patterns ☐

CONJUNCTIONS.

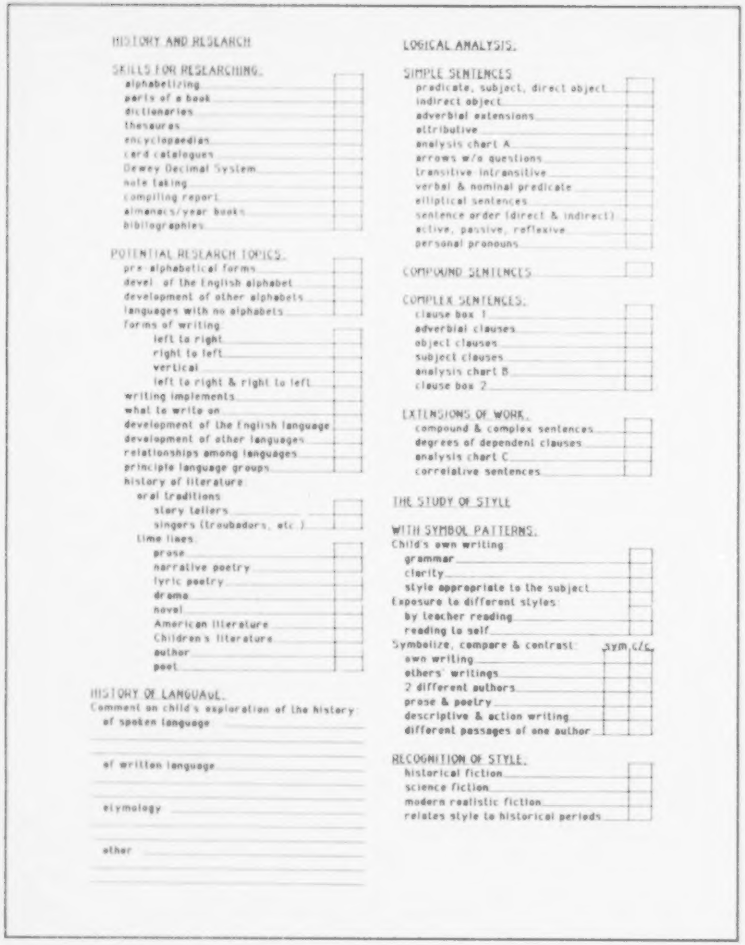
  introduction (GB VIII A) ☐
  filler boxes ☐
  commands ☐
  symbolizes in writings ☐
  types ☐
  patterns ☐

INTERJECTIONS.

  introduction (GB IX A) ☐
  filler boxes ☐
  symbolizes in writings ☐
  patterns ☐

VERBS.

  present tense ☐
  past tense ☐
  strong & weak verbs ☐
  future tense ☐
  auxiliary verbs ☐
  present perfect ☐
  past perfect ☐
  future perfect ☐
  continuous verbs ☐
  pronoun chart ☐
  emphatic form:
    will/shall ☐
    would/should ☐
  mood ☐
    indicative mood ☐
    imperative mood ☐
  infinitive ☐
  participle ☐
  transitive/intransitive ☐
  forms:
    active ☐
    passive ☐
    reflexive ☐
    negative ☐



HISTORY AND RESEARCH

SKILLS FOR RESEARCHING:
- alphabetizing ☐
- parts of a book ☐
- dictionaries ☐
- thesaures ☐
- encyclopaedias ☐
- card catalogues ☐
- Dewey Decimal System ☐
- note taking ☐
- compiling report ☐
- almanacs/year books ☐
- bibliographies ☐

POTENTIAL RESEARCH TOPICS:
- pre-alphabetical forms ☐
- devel. of the English alphabet ☐
- development of other alphabets ☐
- languages with no alphabets ☐
- forms of writing:
  - left to right ☐
  - right to left ☐
  - vertical ☐
  - left to right & right to left ☐
- writing implements ☐
- what to write on ☐
- development of the English language ☐
- development of other languages ☐
- relationships among languages ☐
- principle language groups ☐
- history of literature:
  - oral traditions
    - story tellers ☐
    - singers (troubadors, etc.) ☐
  - time lines:
    - prose ☐
    - narrative poetry ☐
    - lyric poetry ☐
    - drama ☐
    - novel ☐
    - American literature ☐
    - Children's literature ☐
    - author ☐
    - poet ☐

HISTORY OF LANGUAGE:

Comment on child's exploration of the history:

of spoken language ____________________

of written language ____________________

etymology ____________________

other ____________________

LOGICAL ANALYSIS:

SIMPLE SENTENCES
- predicate, subject, direct object ☐
- indirect object ☐
- adverbial extensions ☐
- attributive ☐
- analysis chart A ☐
- arrows w/o questions ☐
- transitive-intransitive ☐
- verbal & nominal predicate ☐
- elliptical sentences ☐
- sentence order (direct & indirect) ☐
- active, passive, reflexive ☐
- personal pronouns ☐

COMPOUND SENTENCES ☐

COMPLEX SENTENCES:
- clause box 1 ☐
- adverbial clauses ☐
- object clauses ☐
- subject clauses ☐
- analysis chart B ☐
- clause box 2 ☐

EXTENSIONS OF WORK:
- compound & complex sentences ☐
- degrees of dependent clauses ☐
- analysis chart C ☐
- correlative sentences ☐

THE STUDY OF STYLE

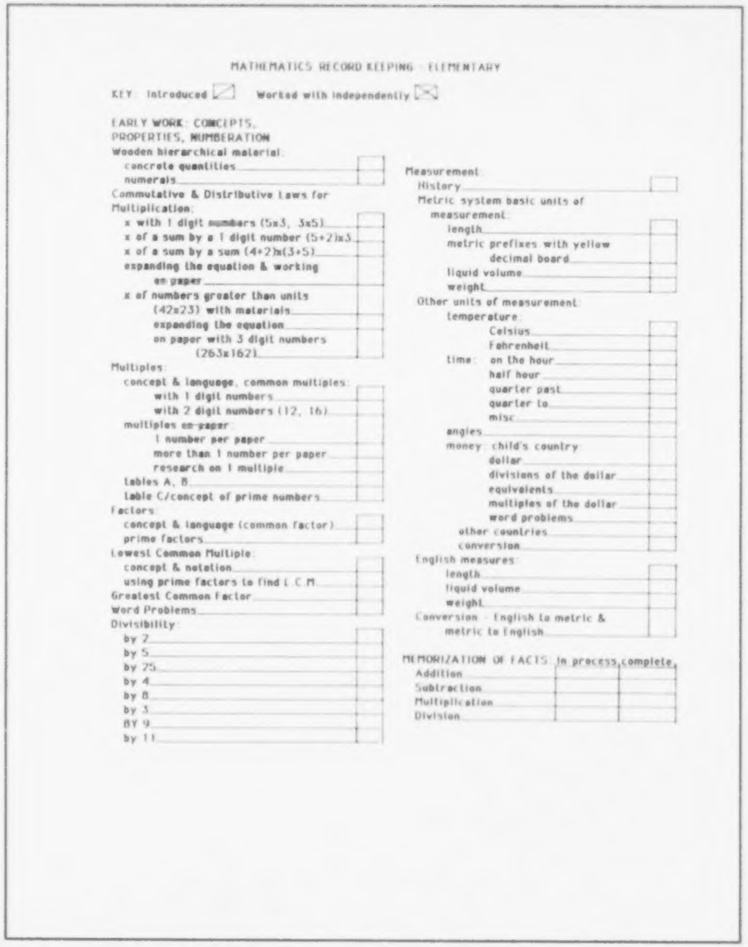
WITH SYMBOL PATTERNS:

Child's own writing:
- grammar ☐
- clarity ☐
- style appropriate to the subject ☐

Exposure to different styles:
- by teacher reading ☐
- reading to self ☐

Symbolize, compare & contrast:	sym	c/c
own writing	☐	☐
others' writings	☐	☐
2 different authors	☐	☐
prose & poetry	☐	☐
descriptive & action writing	☐	☐
different passages of one author	☐	☐

RECOGNITION OF STYLE:
- historical fiction ☐
- science fiction ☐
- modern realistic fiction ☐
- relates style to historical periods ☐



MATHEMATICS RECORD KEEPING - ELEMENTARY

KEY: Introduced ⧄ Worked with independently ☒

EARLY WORK: CONCEPTS, PROPERTIES, NUMBERATION

Wooden hierarchical material:
- concrete quantities ☐
- numerals ☐

Commutative & Distributive Laws for Multiplication:
- x with 1 digit ~~numbers~~ (5x3, 3x5) ☐
- x of a sum by a 1 digit number (5+2)x3 ☐
- x of a sum by a sum (4+2)x(3+5) ☐
- expanding the equation & working ~~on paper~~ ☐
- x of numbers greater than units
  - (42x23) with materials ☐
  - expanding the equation ☐
  - on paper with 3 digit numbers (263x162) ☐

Multiples:
- concept & language, common multiples:
  - with 1 digit numbers ☐
  - with 2 digit numbers (12, 16) ☐
- multiples ~~on paper~~:
  - 1 number per paper ☐
  - more than 1 number per paper ☐
  - research on 1 multiple ☐
- tables A, B ☐
- table C/concept of prime numbers ☐

Factors:
- concept & language (common factor) ☐
- prime factors ☐

Lowest Common Multiple:
- concept & notation ☐
- using prime factors to find L.C.M. ☐

Greatest Common Factor ☐

Word Problems ☐

Divisibility:
- by 2 ☐
- by 5 ☐
- by 25 ☐
- by 4 ☐
- by 8 ☐
- by 3 ☐
- BY 9 ☐
- by 11 ☐

Measurement:
- History ☐
- Metric system basic units of measurement:
  - length ☐
  - metric prefixes with yellow decimal board ☐
  - liquid volume ☐
  - weight ☐
- Other units of measurement:
  - temperature:
    - Celsius ☐
    - Fahrenheit ☐
  - time:
    - on the hour ☐
    - half hour ☐
    - quarter past ☐
    - quarter to ☐
    - misc ☐
  - angles ☐
  - money: child's country
    - dollar ☐
    - divisions of the dollar ☐
    - equivalents ☐
    - multiples of the dollar ☐
    - word problems ☐
    - other countries ☐
    - conversion ☐
- English measures:
  - length ☐
  - liquid volume ☐
  - weight ☐
- Conversion - English to metric & metric to English ☐

MEMORIZATION OF FACTS:	in process	complete
Addition	☐	☐
Subtraction	☐	☐
Multiplication	☐	☐
Division	☐	☐

OPERATIONS: FIRST WORK

- Hierarchical material:
  - verbally ☐
  - numeration ☐
- Long Multiplication:
  - Large bead frame:
    - introduction & notation:
      - hierarchical material ☐
      - special paper ☐
    - short X with expanded notation ☐
    - long x with expanded notation:
      - writing answer only ☐
      - writing all ☐
  - Flat bead frame ☐
  - Bank game ☐
  - Checkerboard:
    - Introduction to board ☐
    - Problems without writing ☐
    - Writing problem & answer ☐
    - Writing all ☐
    - Geometrical x ☐
    - Cross multiplication ☐

- Long Division:
  - Distributive with racks & tubes:
    - write quotient & remainder ☐
    - write intermediate remainders ☐
    - write all ☐
    - special cases ☐
  - Group Division with stamp game:
    - with material ☐
    - on paper ☐

- Squares & Cubes of Numbers:
  - making geometric figures ☐
  - concept & notation of squares ☐
  - concept & notation of cubes ☐
  - total numerical values of pyramid of squares ☐
  - building the tables ☐
  - power scales ☐
  - decanomial with beads:
    - vertical ☐
    - horizontal ☐
    - commutative ☐
  - numerical decanomial ☐
  - tower of jewels ☐
  - computing total value of decanomial ☐
  - operations with powers ☐

- Fractions:
- Introduction ☐
  - Equivalence ☐
  - Operations: First Cases:
    - addition w/same denominators ☐
    - subtraction w/same denominators ☐
    - multiplication of fraction by whole number ☐
    - division of fraction by whole number ☐

- Operations: Second Cases:
- Addition w/different denominators:
  - within limits of materials ☐
  - working towards abstraction ☐
- Subtraction w/different denominators:
  - within limits of materials ☐
  - working towards abstraction ☐
- Multiplication of whole number by a fracton ☐
- Division of ~~whole number~~ by fraction ☐
- Operations: Third Cases:
- Multiplication of fraction by fraction: ☐
  - ~~same denominators~~ ☐
  - different denominators:
    - within limits of materials ☐
    - working towards abstraction ☐
- Division of fraction by fraction:
  - same denominators ☐
  - different denominators within limits of materials:
    - distributive ☐
    - group ☐
  - working towards abstraction ☐
- Word problems ☐
- Fraction charts ☐

- Decimal Fractions:
  - Numeration:
    - presentation of quantity ☐
    - symbol with quantity ☐
    - formation & reading w/decimal bd ☐
    - conversion of common fractions to decimal fractions ☐
  - Operations: Simple Cases
    - addition ☐
    - subtraction ☐
    - multiplication by a unit ☐
    - division by a unit ☐
  - Multiplication, continued:
    - by a decimal less than a unit ☐
    - with the decimal checkerboard
      - introduction with felt squares ☐
      - using the decimal checkerboard ☐
      - working on paper ☐
    - abstraction of the rule ☐
  - Division, continued:
    - a divisor as a decimal fraction ☐
    - abstraction of the rule ☐
  - Effects:
    - x or ÷ by powers of 10 ☐
    - relative size of terms when multiplying ☐
    - relative size of terms when dividing ☐

Operations Continued

- Squaring:
  - Transformation of a Square:
    - Numerically ☐
    - Algebraically ☐
  - Passing from one square to another:
    - Numerically ☐
    - Algebraically ☐
  - Squaring a Sum:
    - Numerically ☐
    - Algebraically ☐
    - Two-digit binomial expressed hierarchically ☐
    - Squaring trinomial hierarchically ☐
    - Verbalizing the rule for squaring ☐
    - Generalization of squaring ☐
- Cubing:
  - Passing from one cube to another ☐
  - Cubing a binomial numerically:
    - starting from the square ☐
    - starting from the cube of the first term ☐
  - Cubing a binomial algebraically ☐
  - Cubing a trinomial algebraically ☐
  - Cubing a ~~trinomial numerically~~ ☐
  - Cubing a trinomial hierarchically:
    - Story of the 3 kings ☐
    - Transfer to hierarchical trinomial ☐
    - Calculating the cube of a three-digit number ☐
- Square Root:
  - Sensorial exploration - square root ☐
  - Concept/language/notation ☐
  - Finding roots of three digit numbers with the golden beads ☐
  - Finding the number of digits in the root ☐
  - Building the square by categories ☐
  - Special cases ☐
  - Leading to abstraction:
    - Building by periods ☐
    - Calculations to indicate the digits after the first of the roots ☐
      - Working directly on paper ☐
      - Verbalizing rule for finding square root ☐
- Cube Root:
  - Concept and notation ☐
  - Finding two-digit cube roots with wooden material ☐
  - Finding three-digit cube roots with the hierarchical trinomial cube ☐
  - Working directly on paper ☐
  - Verbalizing rule for cube root ☐

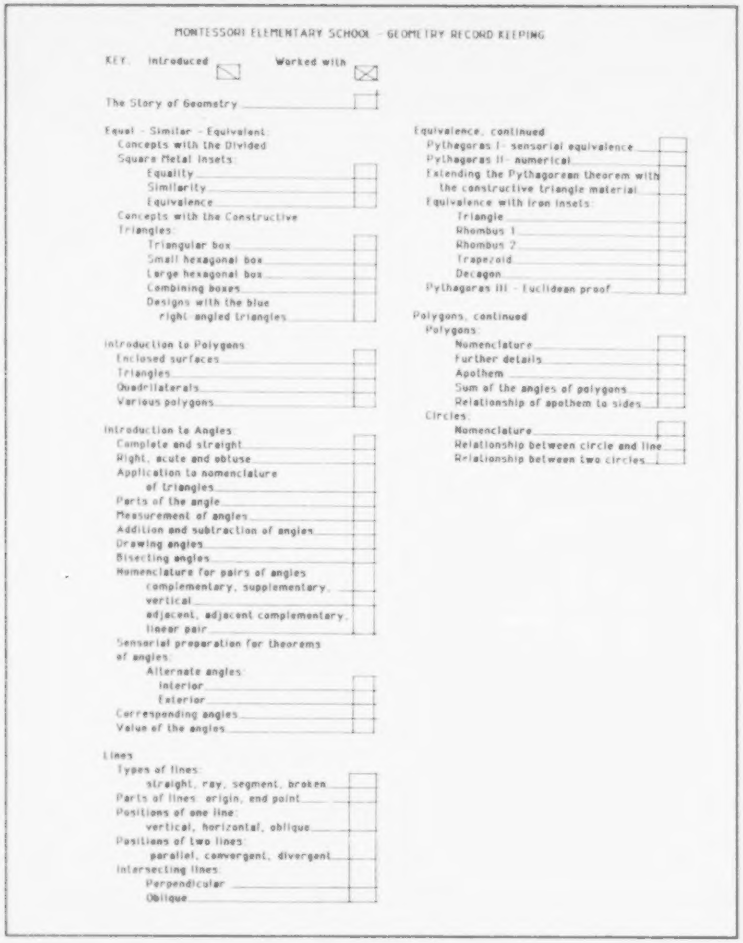
- Negative Numbers:
  - Addition ☐
  - Subtraction ☐
  - Multiplication ☐
  - Division ☐

- Powers of Numbers:
  - Bases and Powers:
    - Powers of two ☐
    - Using a unit of a different size ☐
    - The decimal system as base ten ☐
  - Expanded notation:
    - Multiplying numbers of the same base ☐
    - Dividing numbers of the same base ☐
    - Expanded notation with powers ☐
    - Operations in expanded notation with powers ☐
  - Non-decimal bases:
    - Numeration in bases ☐
    - Operations in different bases ☐
    - Converting from one base to another base ☐

- Word Problems:
  - Steps in solving word problems ☐
  - Distance/Velocity/Time ☐
  - Principal/Interest/Rate/Time ☐

- Ratio and Proportion:
  - Concept and notation of ratio ☐
  - Word problems with ratio ☐
  - Concept of proportion ☐
  - Calculations with proportion leading to cross-multiplication ☐
  - Word problems with proportion ☐

- ALGEBRA:
  - binomial squared ☐
  - trinomial squared ☐
  - decanomial squared ☐
  - binomial cubed ☐
  - trinomial cubed ☐
  - Introduction to Algebra:
    - Balancing an equation ☐
    - Solving for X ☐
    - Word problems with equations ☐



MONTESSORI ELEMENTARY SCHOOL - GEOMETRY RECORD KEEPING

KEY. Introduced ⧅ Worked with ☒

The Story of Geometry ☐

Equal - Similar - Equivalent:
- Concepts with the Divided Square Metal Insets:
  - Equality ☐
  - Similarity ☐
  - Equivalence ☐
- Concepts with the Constructive Triangles:
  - Triangular box ☐
  - Small hexagonal box ☐
  - Large hexagonal box ☐
  - Combining boxes ☐
  - Designs with the blue right-angled triangles ☐

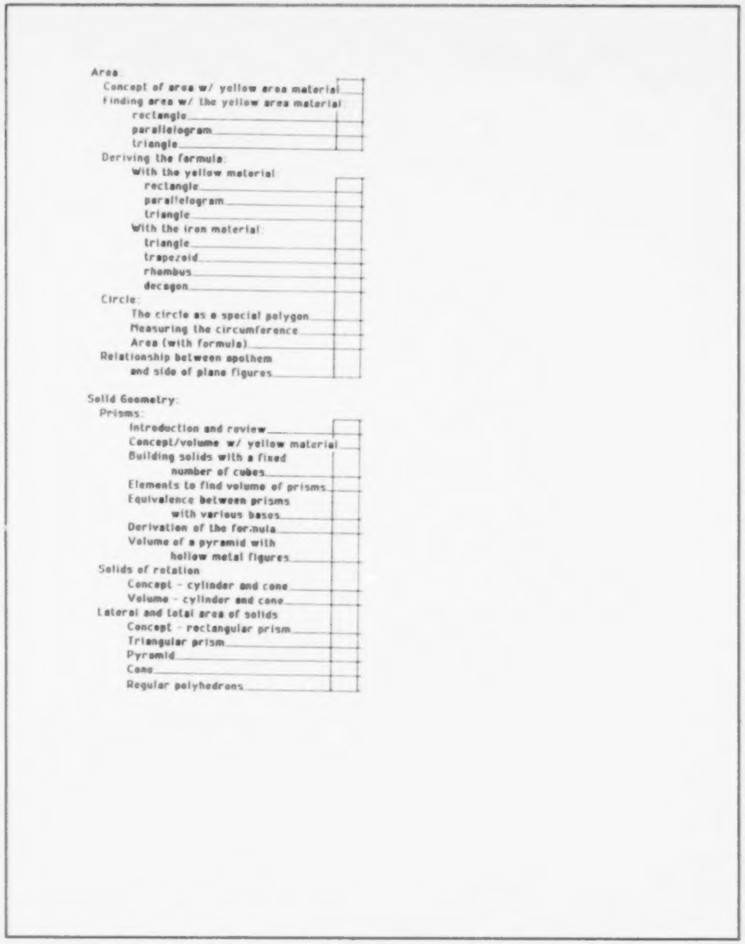
Introduction to Polygons:
- Enclosed surfaces ☐
- Triangles ☐
- Quadrilaterals ☐
- Various polygons ☐

Introduction to Angles:
- Complete and straight ☐
- Right, acute and obtuse ☐
- Application to nomenclature of triangles ☐
- Parts of the angle ☐
- Measurement of angles ☐
- Addition and subtraction of angles ☐
- Drawing angles ☐
- Bisecting angles ☐
- Nomenclature for pairs of angles
  - complementary, supplementary, ☐
  - vertical ☐
  - adjacent, adjacent complementary, linear pair ☐
- Sensorial preparation for theorems of angles:
  - Alternate angles:
    - interior ☐
    - Exterior ☐
- Corresponding angles ☐
- Value of the angles ☐

Lines
- Types of lines:
  - straight, ray, segment, broken ☐
- Parts of lines: origin, end point ☐
- Positions of one line:
  - vertical, horizontal, oblique ☐
- Positions of two lines:
  - parallel, convergent, divergent ☐
- Intersecting lines:
  - Perpendicular ☐
  - Oblique ☐

Equivalence, continued
- Pythagoras I - sensorial equivalence ☐
- Pythagoras II - numerical ☐
- Extending the Pythagorean theorem with the constructive triangle material ☐
- Equivalence with iron insets:
  - Triangle ☐
  - Rhombus 1 ☐
  - Rhombus 2 ☐
  - Trapezoid ☐
  - Decagon ☐
- Pythagoras III - Euclidean proof ☐

Polygons, continued
- Polygons:
  - Nomenclature ☐
  - Further details ☐
  - Apothem ☐
  - Sum of the angles of polygons ☐
  - Relationship of apothem to sides ☐
- Circles:
  - Nomenclature ☐
  - Relationship between circle and line ☐
  - Relationship between two circles ☐



Area:
- Concept of area w/ yellow area material ☐
- Finding area w/ the yellow area material:
  - rectangle ☐
  - parallelogram ☐
  - triangle ☐
- Deriving the formula:
  - With the yellow material:
    - rectangle ☐
    - parallelogram ☐
    - triangle ☐
  - With the iron material:
    - triangle ☐
    - trapezoid ☐
    - rhombus ☐
    - decagon ☐
- Circle:
  - The circle as a special polygon ☐
  - Measuring the circumference ☐
  - Area (with formula) ☐
- Relationship between apothem and side of plane figures ☐

Solid Geometry:
- Prisms:
  - Introduction and review ☐
  - Concept/volume w/ yellow material ☐
  - Building solids with a fixed number of cubes ☐
  - Elements to find volume of prisms ☐
  - Equivalence between prisms with various bases ☐
  - Derivation of the formula ☐
  - Volume of a pyramid with hollow metal figures ☐
- Solids of rotation
  - Concept - cylinder and cone ☐
  - Volume - cylinder and cone ☐
- Lateral and total area of solids
  - Concept - rectangular prism ☐
  - Triangular prism ☐
  - Pyramid ☐
  - Cone ☐
  - Regular polyhedrons ☐

EARLY CHILDHOOD EDUCATION

BEGINNING MONTESSORI AT AGE THREE

ALL FIVE YEAR OLD MONTESSORI KINDERGARTEN

EARLY CHILDHOOD FACT SHEET

INTERFACE — PRIVATE PRE-KINDERGARTEN WITH PUBLIC KINDERGARTEN

SUPPORT FOUNDATIONS

PROMOTION

PARENT HANDBOOKS

JOINT VENTURE SPONSORSHIP

HEADSTART-MONTESSORI RELATIONS

Not every school district, or even full-day kindergarten, is structured to support Montessori preschool. Researchers and government policymakers concur that early childhood education is a dynamic factor in a child's educational life. This chapter shows a variety of ways to integrate different funding sources so that early childhood Montessori can be supported within a school district that does not normally provide pre-kindergarten services.

EARLY CHILDHOOD EDUCATION

THE IMPORTANCE OF BEGINNING MONTESSORI AT AGE THREE

by David Kahn

- ***Starting at age three enhances the teacher-child relationship, intensifies the sensitive periods of early childhood, builds leadership over time, and provides a greater impact on the child's long-term personal success.***
- ***In contrast to the three year Montessori program, the single year Montessori kindergarten class means complete classroom turnover as twenty-five new children enter each year.***

Only about one-third of Montessori Public Schools programs in the United States are available to three and four year olds. Dr. Montessori designed her curriculum to start at age three, not at age five. Most early childhood educators concur that there are distinct advantages to beginning preschool at age three, whether for Montessori theory, contemporary follow-up studies, or for the early childhood education sources at large. Significant research nationwide (the Perry Preschool Project, the New York University Preschool Project) cites higher literacy, greater rates of employment, and more education beyond secondary as outcomes for those who start school at age three. Keeping children in school reduces the likelihood that they will become delinquent and require expensive incarceration and remedial treatment programs. The Children's Defense Fund budget has indicated that monies to remedy problems such as teen pregnancy, drug addiction and criminal activity are about six times the cost per student of preschool programs. Yet only 16 percent of our nation's children are served by early childhood programs. It is critically important that school districts consider funding preschool programs, including the Montessori preschool option. The Montessori educational concept is a time-tested approach to teaching young children, and research documents its successful impact over time. Further research evidence indicates that elementary children who have Montessori preschool achieve at significantly higher levels than elementary peers who have not had Montessori preschool experience (Takacs and Clifford, 1988).

Sensitive Periods

From a Montessori point of view, starting school at age three is indispensable because it provides an aid to the developing sensitive periods of language, order and movement. Indeed the three year old demonstrates a greater intensity than a five year old in the acquisition of a native tongue, the awareness of the order of the surrounding environment and willingness to maintain that order, and the perfection of body movement, especially in everyday actions. For this reason the beginning motivation for writing, reading, and for developing spoken language occurs well before mandatory school age.

Teacher-Child Relationship

In addition to skill competencies, the issue of starting school at age three is fundamental to the teacher-child relationship. Three year olds by their very nature seek out an intimate and close bond with the directress. Young parents of a three year old are more open to suggestions and direction for parenting ideas and also establish closer relationships with the teacher. The full Montessori preschool program was designed to involve the same teacher over a three year time period in a deepening relationship with the child and the family. Over three years the teacher learns the vital signs that tell her when a child needs a challenge, an encouraging word, or an exact statement of feelings to resolve a social conflict. The personal history of each child becomes second nature to the teacher's way of interacting.

Social Leadership Can Evolve

Work intensity is gradual, at the child's own pace and with maximum choice for the child. When there is choice and uninterrupted time the child builds better concentration and works for longer periods of time. In a three-to-six age grouping only one-third of the class is replaced each year, allowing the children's patterns of leadership and knowledge to remain in place as a new group is initiated. Older children provide social and academic models for the younger children. The maturing child finds a developmental variety of classmates and can identify with different ages according to personal needs. The multi-age group setting provides more social options and more academic options because a greater variety of children are working on a greater variety of activities.

Kindergarten Means Yearly Turnover

In contrast to the three year Montessori program, the single year Montessori kindergarten class means complete classroom turnover as twenty-five new children enter each year. These children bring a variety of educational experiences and must learn the routines and traditions of the class. Although personal development is important, more energy needs to be devoted to developing skills and to teaching subjects that prepare the children for Montessori elementary. Class-wide demand for the same pieces of equipment requires expensive duplication of Montessori apparatus. Sometimes classes of five year olds are staggered, with groups of children assigned to respective equipment in order to not overburden any one material. These artificial constraints impose on the freedom of the child for the sake of access to the materials and are not necessary in a multi-age setting.

Kindergarten Means Language and Math Orientation

With a Montessori kindergarten (age 5 only), the curriculum focus is usually on language and math. Athough practical life and sensorial materials are reviewed, five year olds seek mathematic and linguistic competence and will not exhibit that natural repetition that is so much a part of the three year old's exploration. Lack of repetition also diminishes the role of self-correction; the teacher provides the control of error. The children need more "monitoring" and sequencing of work by the adult. Five year olds learn differently than three year olds. They proceed using reasoning skills and, because of this, require more formal presentation time. Although high expectations result in high skills, the Montessori emphasis on intrinsic motivation may be lost.

Kindergarten: Discipline External, not Internal

With a three year old it is easier to use personal modeling as an educational influence. The teacher and older children can have a great impact just by showing the desired work and behaviors. Five year olds without preschool experience are frequently less socialized and less organized in their personal habits and outlooks and require more remedial approaches to discipline than children who have had preschool experiences. Ground rules for the five year old without Montessori background must be stated and require external enforcement. By contrast, the starting three year old responds to the order of the environment and can internalize expectations without a great deal of verbal commentary.

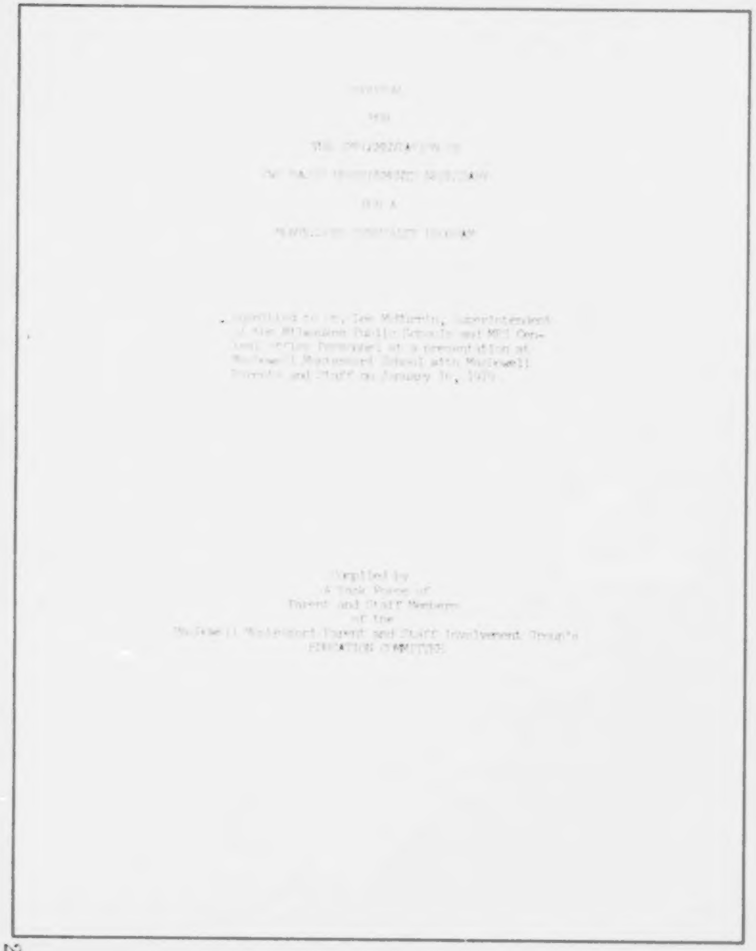
Conclusion

The Montessori preschool learning environment is designed for three-to-six year olds. With the three year old the development is centered on the child, not on subjects. The Montessori teacher can focus on the child's whole personality by growing up with a child and his or her parents over a three year period in the context of a family cluster which is the Montessori multi-age group setting. The Montessori preschool teacher is trained for this orientation, the pedagogy is designed for it, and the child benefits from a process which is natural and gradual and embodies the right mix of freedom and discipline.

The appendices for this Chapter offer a variety of funding solutions for pre-kindergarten programs that are especially useful when school districts cannot provide preschool funding.

Appendix 1: Proposal for the Implementation of Two Basic Requirements Necessary for a Montessori Specialty Program — Milwaukee Public Schools, Milwaukee, Wisconsin

Written by a group of parents, administrators, and faculty, this proposal argues for district support to include three year olds and an extended day program.



PROPOSAL

FOR

THE IMPLEMENTATION OF

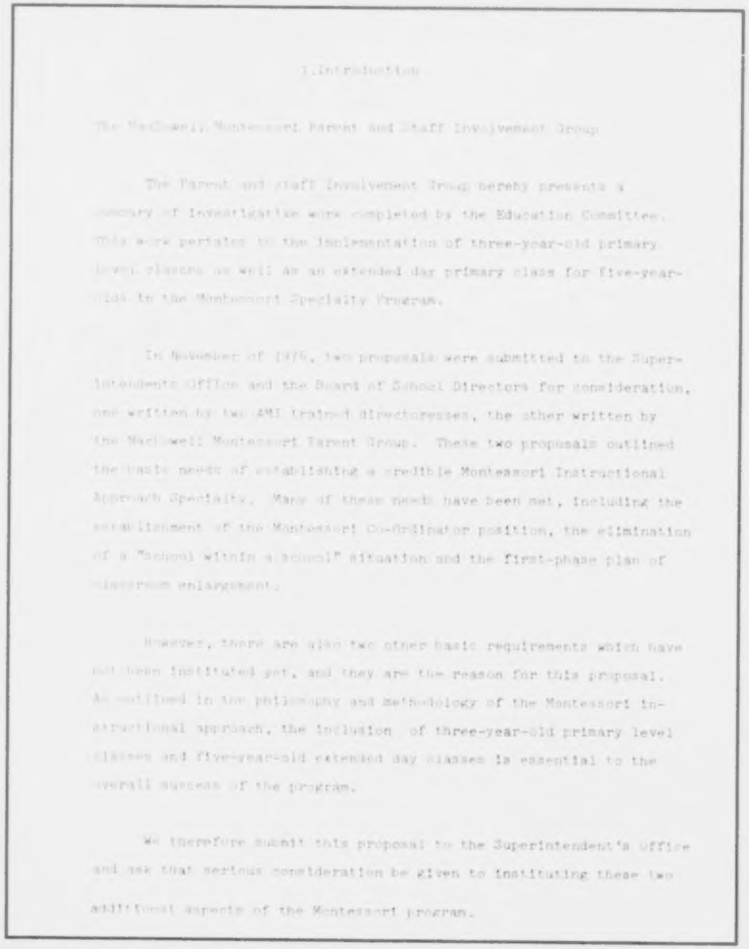
TWO BASIC REQUIREMENTS NECESSARY

FOR A

MONTESSORI SPECIALTY PROGRAM

Submitted to Dr. Lee McMurrin, Superintendent of the Milwaukee Public Schools and MPS Central Office Personnel at a presentation at MacDowell Montessori School with MacDowell Parents and Staff on January [illegible], 1979.

Compiled by
A Task Force of
Parent and Staff Members
of the
MacDowell Montessori Parent and Staff Involvement Group's
EDUCATION COMMITTEE



I. Introduction

The MacDowell Montessori Parent and Staff Involvement Group

The Parent and Staff Involvement Group hereby presents a summary of investigative work completed by the Education Committee. This work pertains to the implementation of three-year-old primary level classes as well as an extended day primary class for five-year-olds in the Montessori Specialty Program.

In November of 1976, two proposals were submitted to the Superintendents Office and the Board of School Directors for consideration, one written by two AMI trained directoresses, the other written by the MacDowell Montessori Parent Group. These two proposals outlined the basic needs of establishing a credible Montessori Instructional Approach Specialty. Many of these needs have been met, including the establishment of the Montessori Co-Ordinator position, the elimination of a "school within a school" situation and the first-phase plan of classroom enlargement.

However, there are also two other basic requirements which have not been instituted yet, and they are the reason for this proposal. As outlined in the philosophy and methodology of the Montessori instructional approach, the inclusion of three-year-old primary level classes and five-year-old extended day classes is essential to the overall success of the program.

We therefore submit this proposal to the Superintendent's Office and ask that serious consideration be given to instituting these two additional aspects of the Montessori program.

II. Rationale for Inclusion of Three-Year-Old Children
in the Montessori Specialty

Seventy years ago Dr. Montessori began working with and telling the world about the needs of the three-year-old child. She saw this age of early childhood as the age when the child's "absorbent mind" was [illegible]. She stated that the years three to six are a particular sensitive period in our growth, during which the child can benefit enormously from experiences in a prepared learning environment. She allowed three-year-olds to work within this prepared environment, designed to utilize maximum potential of the "sensitive periods", which resulted in leading the child on a natural path to self-mastery and independence.

The phrase "sensitive periods in development" was first used by Hugo de Vries with his research in the development of certain animals, in particular from the life history of certain insects which pass through metamorphosis. Later, Montessori applied this same idea to human development. The study of the sensitive periods [illegible] an understanding of the child's mental growth.

Montessori defined a sensitive period as a "special sensibility which a creature acquires in its infantile state, while it is still in a process of evolution. It is a transient disposition and limited to the acquisition of a particular trait. Once this trait or characteristic has been acquired the special sensibility disappears." [illegible] " . . . the child's psychic development does not take place by chance, that it does not originate in external stimuli, but is guided by transient sensibilities. . . ."

While the child develops, he passes through certain sensitive periods. Each sensitive period is like a temporary instinct which enables the child to see certain elements in the environment to [illegible] the development of a certain trait. The child is attracted to certain environmental elements for a definite and limited time (only as long as the sensitivity is present), pursuing those elements with an "irresistible impulse" and a "well-defined activity". At the peak of the sensitive period the child's mind is like a searchlight that focuses on certain aspects of the environment to the exclusion of others, enabling the child to choose from his complex environment what is suitable and necessary for his growth. He is sensitive to some things but is indifferent to others. Such attention is not the result of mere curiosity, it is more like a burning passion, setting in motion a marvellous creative activity in contact with the outside world, thus building up consciousness.

The child has a real need to learn and acquire experience in the area in which he is sensitive. If the child's need is satisfied, he learns joyfully, easily and without fatigue. Each effort brings an increase of power. His being flourishes on experiences that satisfy the need of his sensitive period. After working under the guidance of this inner urge the child feels better, stronger and calmer, because by means of such work he has been creating himself. The child constructs his personality through the establishment and perfection of some function or characteristic he develops in a sensitive period.

If a child is not allowed to satisfy the need a sensitive period creates in him, he may become unhappy and frustrated. Damage can be to his development. Montessori states, "a child has a special interior vitality which accounts for the miraculous manner in which he makes his natural conquests. But if during his sensitive stage a child is confronted with an obstacle to his toil, he suffers a disturbance or even warping of his nature; a spiritual martyrdom that is still too little known, but whose scars are borne unconsciously by most adults... The tantrums of the sensitive periods are external manifestations of an unsatisfied need, expressions of alarm over a danger, or of something being out of place. They disappear just as soon as there is a possibility of satisfying the need or of eliminating the danger...Adults have no direct influence on these different states. But if a child has not been able to act according to the directives of his sensitive period, the opportunity of a natural conquest is lost, and is lost for good."

The sensitive periods are transient. They help the child acquire certain functions or determined characteristics. When this aim is accomplished the special sensibility disappears and is often replaced by another and quite different one. Once a sensitive period passes it never returns. But the benefits a child acquires during a sensitive period last a lifetime.

It is true that a child will nevertheless grow up even without having made use of this or that sensitive period in his development; but he will be a "diminished individual" by comparison with what he might have been, and should have been. With each sensitive period that we miss, we lose an opportunity of perfecting ourselves in some particular way. If the child misses some of his sensitive periods during his development, he will still grow up into an adult. But that

adult will not be so strong nor so perfect an individual as he would have been if he had been able to avail himself of their constructive power. Many of us adults are aware of our many awkward traits and weaknesses which may have been our better points if we would have had the right experiences at the right time.

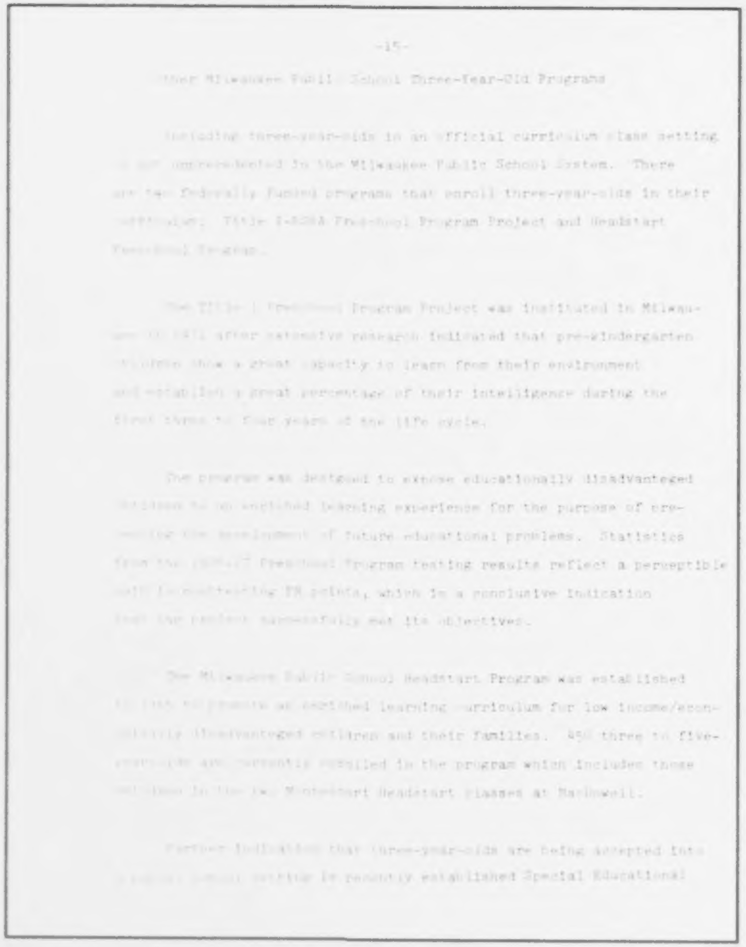
While this is not an attempt to prove or disprove Dr. Montessori's educational insights, the following must be pointed out. Within a functioning three to six year old Montessori classroom, the children beginning at three build upon an internal need for order and self-mastery to choose his/her own tasks, work at their own pace and progress individually as well as socially. Dr. Montessori demonstrated that through this type of freedom within a controlled environment, children would become independent and self-disciplined learners.

Not only does this lead to growth in general intelligence, but it also develops within a young child coping and competency skills. Follow up studies of different early childhood models are now showing that the child's ability to work independently, to be self-disciplined and to feel positive about oneself are traits that the child carries out of a good "pre-school" experience into the rest of his/her life. The establishment of these basic value skills are more important than the temporary gains in "measured intelligence", which tend to even out after third grade.

When we ask for three-year-olds to be included in MacDowell Montessori primary level classes, we are simply asking to be able to respect Dr. Montessori's own insights and demands for a Montessori school. Dr. Montessori outlined a comprehensive view of child dev-

-8-

[illegible] and attention in which the three-year-old child plays the important role of laying the cornerstone for further education.



-15-

Other Milwaukee Public School Three-Year-Old Programs

Including three-year-olds in an official curriculum class setting is not unprecedented in the Milwaukee Public School System. There are two federally funded programs that enroll three-year-olds in their curriculum: Title I-ESEA Pre-School Program Project and Headstart Preschool Program.

The Title I Preschool Program Project was instituted in Milwaukee in 1971 after extensive research indicated that pre-kindergarten children show a great capacity to learn from their environment and establish a great percentage of their intelligence during the first three to four years of the life cycle.

The program was designed to expose educationally disadvantaged children to an enriched learning experience for the purpose of preventing the development of future educational problems. Statistics from the 1976-77 Preschool Program testing results reflect a perceptible shift in posttesting IQ points, which is a conclusive indication that the project successfully met its objectives.

The Milwaukee Public School Headstart Program was established in 1965 to promote an enriched learning curriculum for low income/economically disadvantaged children and their families. 450 three to five-year-olds are currently enrolled in the program which includes those enrolled in the two Montessori Headstart classes at MacDowell.

Further indication that three-year-olds are being accepted into a public school setting is recently established Special Educational

Needs (EEN) program. This program is funded by the Wisconsin State Department of Public Instruction and currently serves 120 three-year-old children.

III.Rationale for the Extended Day Program for Montessori 5-Year Olds

Within the Montessori view of child development the five-year-old child is in a transitional period and this extended portion of his/her school day is meant to foster this transition. What it means in practice is that all five-year-old children attend school all day. They spend their morning in their primary level (3 and 4 and 5 year old kindergarten) class with a teacher and an aide. In the afternoon they (5 year-olds) remain with their teacher in the extended day program.

Dr. Montessori saw the fifth year in a child's life as being one between "that stage called the absorbent mind" where the child is constantly building his/her own self as a person independent from others. In the next stage from six to twelve the child develops social values, finding where he/she fits within society and how different societies fit within a cosmic, interdependent world.

Within this context, then, the extended day program allows the five-year-old to do the following things:

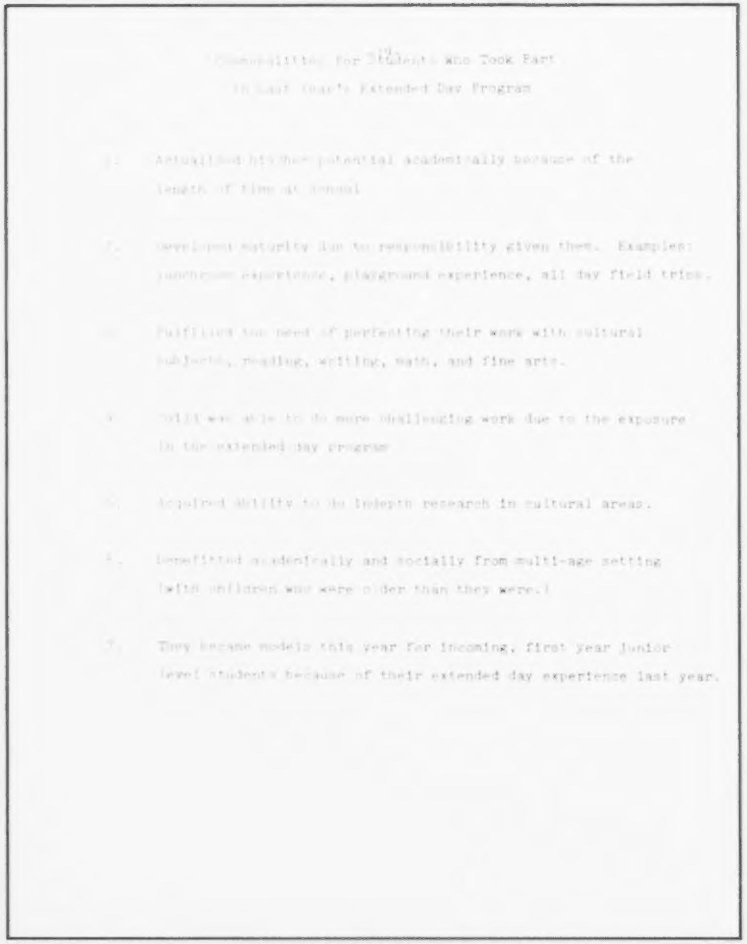
a) Gives the child time within the Montessori classroom framework to make transition from primary level to junior level.

b) The extended day program allows them the time to develop the necessary reading and math skill levels to function well within the junior level (6-9 year old) class. There is important reading skill work done during this period which is not being achieved in our persent dual session kindergarten approach to Montessori. In the primary (3-6 year olds) class the five-year-olds chosen task is one of the

-18-

teacher-helper to the younger children.

Dr. Montessori pointed out long ago that in an ungraded/multi-level classroom environment a child at certain levels of development needs some intensive time alone with their peer group in the classroom.



-19-

Commonalities for Students Who Took Part in Last Year's Extended Day Program

1. Actualized his/her potential academically because of the length of time at school.

2. Developed maturity due to responsibility given them. Examples: lunchroom experience, playground experience, all day field trips.

3. Fulfilled the need of perfecting their work with cultural subjects, reading, writing, math, and fine arts.

4. Child was able to do more challenging work due to the exposure in the extended day program.

5. Acquired ability to do indepth research in cultural areas.

6. Benefitted academically and socially from multi-age setting (with children who were older than they were.)

7. They became models this year for incoming, first year junior level students because of their extended day experience last year.

Other Milwaukee Public School All-Day Kindergarten Programs

An extended day program for five-year-old children is not a new situation in the Milwaukee Public School system. Findings for the years 1966-1977 for the Title I-ESEA All-Day Kindergarten Project indicate that they successfully met their stated objectives where the project was implemented as proposed. It was also concluded that this program was highly regarded by parents as shown by their involvement in program activities and through their general support of the program. Current enrollment in the Title I All Day Kindergarten Program is [illegible].

IV. Alternative Sources of Funding

The Education Committee of the Montessori Parent and Staff Involvement Group feels the best source of funding for the implementation of this proposal would be through local board funding. The following public school Montessori programs are board funded:

1. Bennett Park Montessori, Buffalo, N.Y.
2. Syracuse City District Special Projects, Syracuse, N.Y.

However, considering the present demands on the Milwaukee Public School Board to cut expenditures, we suggest the following alternative sources as ways to support the implementation of our proposal to gain admittance of three-year-olds and provide an extended day for five-year-olds:

A. Title VII. Funding from this source could be obtained by applying under:
   1. Magnet School Grant
   2. Innovative Specialty Programs Grant, a subpart of the Title VII Basic Grants.

B. Title I. Funding could be applied for to support a Title I Montessori Extended Day Kindergarten. The following Montessori public schools currently are funded by Title I:
   1. Peck Elementary, Detroit, MI
   2. Grand Rapids Public School, Grand Rapids, MI (ESEA Title I)
   3. Amelia Earhart Montessori Vanguard School, Dallas, Texas (and Title VII)

C. Prevention and Wellness Demonstration Grant Program. This grant is offered by the State of Wisconsin Department of Health and Social Services. It is a newly established grant with a budget of $[illegible],000 for the 1979 fiscal year.

D. Tuition on a sliding scale basis to support the three-year-tuition and/or the extended day program for five-year-olds. Below is an example of an established sliding tuition scale presently used by the Highland Community School, [illegible] West Highland Avenue, Milwaukee. The figures given are the yearly tuition rate. Adjustments have already been made to reflect the half-time fee schedule which would be applicable to our program.

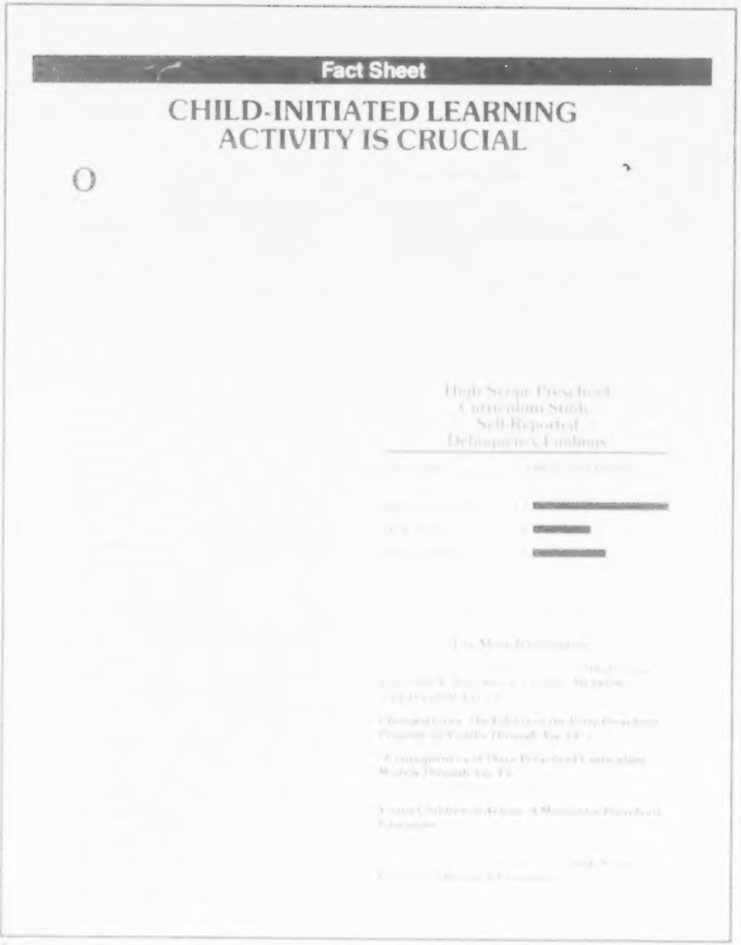
INCOME	NUMBER OF DEPENDENTS (INCLUDING PARENTS)								
	2	3	4	5	6	7	8	9	10
3,000 - 3,900/yr.	25	0	0	0	0	0	0	0	0
4,000 - 4,900/yr.	50	25	0	0	0	0	0	0	0
5,000 - 5,900/yr.	75	50	25	0	0	0	0	0	0
6,000 - 6,900/yr.	100	75	50	25	0	0	0	0	0
7,000 - 7,900/yr.	125	100	75	50	25	0	0	0	0
8,000 - 8,900/yr.	150	125	100	75	50	25	0	0	0
9,000 - 9,900/yr.	188	150	125	100	75	50	25	0	0
10,000 - 10,900/yr.	225	188	150	125	100	75	50	25	0
11,000 - 11,900/yr.	263	225	188	150	125	100	75	50	25
12,000 - 12,900/yr.	300	263	225	188	150	125	100	75	50
13,000 - 13,900/yr.	350	300	263	225	188	150	125	100	75
14,000 - 14,900/yr.	400	350	300	263	225	188	150	125	100
15,000 - 15,900/yr.	450	400	350	300	263	225	188	150	125
16,000 - 16,900/yr.	500	450	400	350	300	263	225	188	150
17,000 - 17,900/yr.	500	500	450	400	350	300	263	225	188
18,000 - 18,900/yr.	500	500	500	450	400	350	300	263	225

The following Public School Montessori programs currently require tuition and/or sliding scale:

1) Bonneville School, Pocatello, Idaho
2) Arlington Public Schools, Arlington, Virginia
3) Grand Rapids Public Schools, Grand Rapids, Michigan
   (20% of student population that are not Title I)
4) Reading Hilltop Community School Reading, Ohio

Appendix 2: Fact Sheet — High/Scope Educational Resource Foundation, Ypsilanti, Michigan

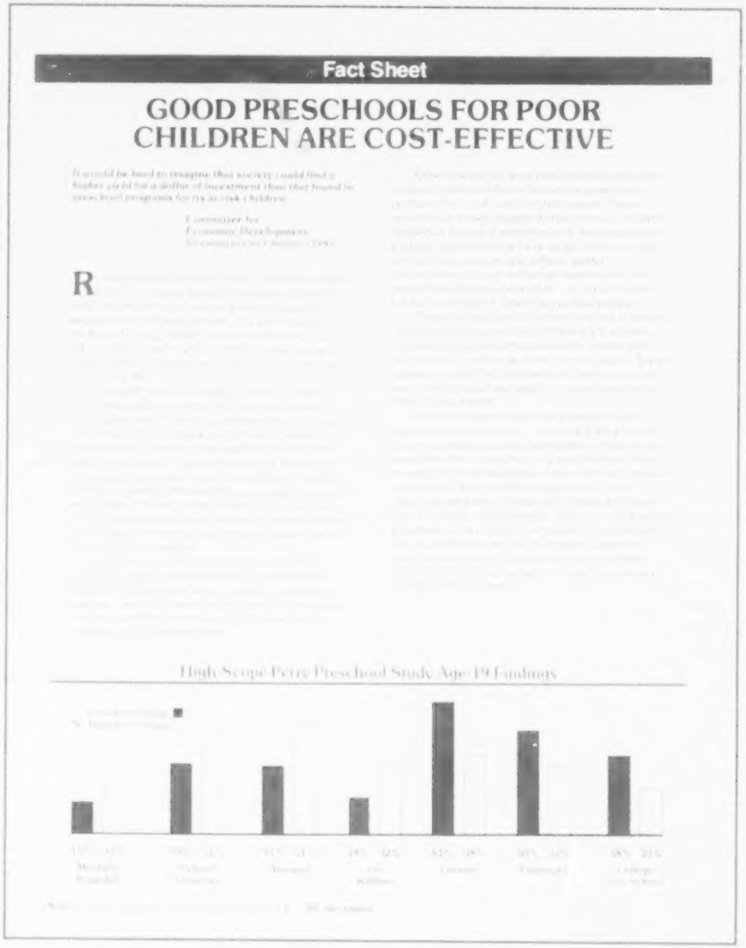
Fact sheets provide longitudinal studies supporting early childhood and child centered curriculum with solid statistics.



Fact Sheet

CHILD-INITIATED LEARNING ACTIVITY IS CRUCIAL

High/Scope Preschool Curriculum Study: Self-Reported Delinquency Findings



Fact Sheet

GOOD PRESCHOOLS FOR POOR CHILDREN ARE COST-EFFECTIVE

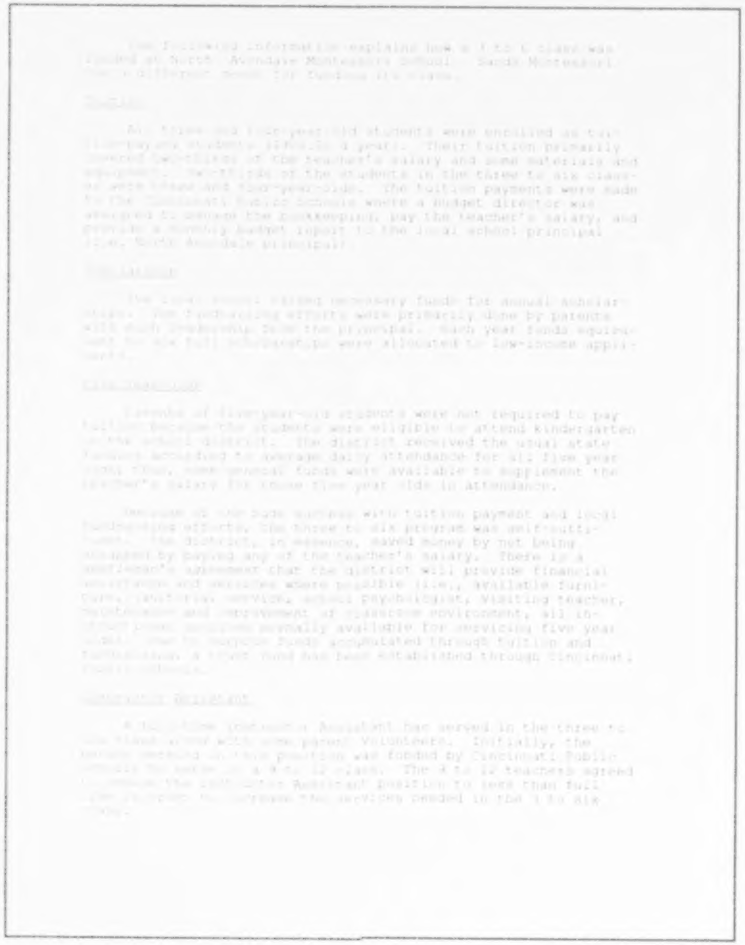
It would be hard to imagine that society could find a higher yield for a dollar of investment than that found in preschool programs for its at-risk children.

Committee for Economic Development

High/Scope Perry Preschool Study Age-19 Findings

Appendix 3: Interface of Privately Supported Three and Four Year Olds with Publicly Supported Five Year Olds — by Phyllis Williams, North Avondale School, Cincinnati, Ohio

This summary statement provides a basis for integrating privately supported pre-kindergarten with publically supported kindergarten.



The following information explains how a 3 to 6 class was funded at North Avondale Montessori School. Sands Montessori [illegible] different model for funding its class.

Tuition

All three and four-year-old students were enrolled as tuition-paying students ([illegible] a year). Their tuition primarily covered two-thirds of the teacher's salary and some materials and equipment. Two-thirds of the students in the three to six classes were three and four-year-olds. The tuition payments were made to the Cincinnati Public Schools where a budget director was assigned to manage the bookkeeping, pay the teacher's salary, and provide a monthly budget report to the local school principal (i.e., North Avondale principal).

Scholarships

The local school raised necessary funds for annual scholarships. The fundraising efforts were primarily done by parents with much leadership from the principal. Each year funds equivalent to six full scholarships were allocated to low-income applicants.

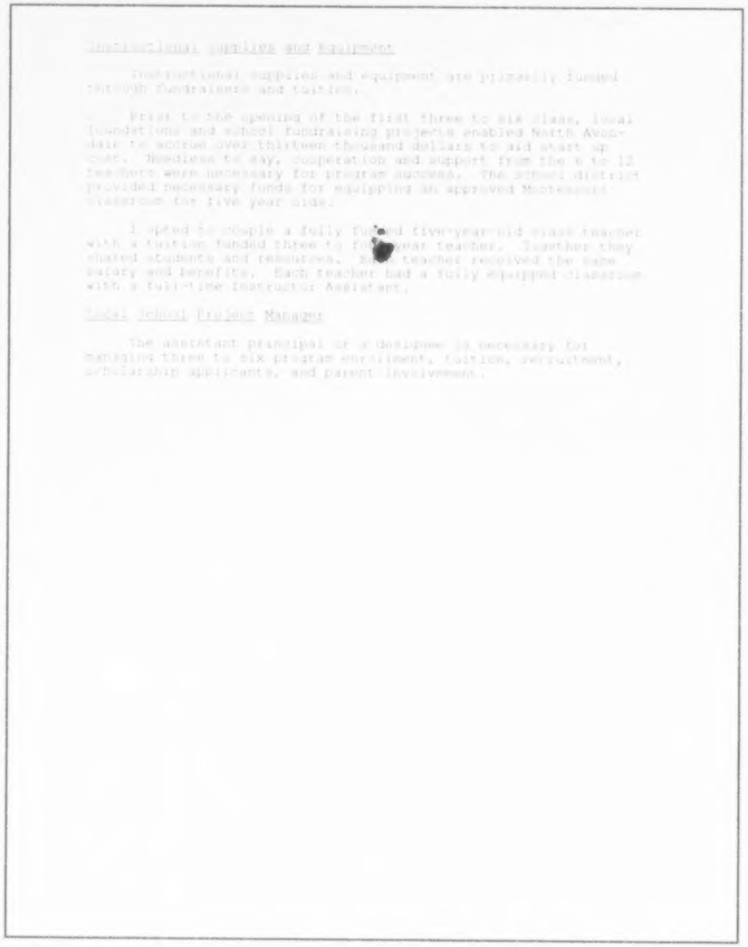
[illegible]

Parents of five-year-old students were not required to pay tuition because the students were eligible to attend kindergarten in the school district. The district received the usual state funding according to average daily attendance for all five year olds; thus, some general funds were available to supplement the teacher's salary for those five year olds in attendance.

Because of the huge success with tuition payment and local fundraising efforts, the three to six program was self-sufficient. The district, in essence, saved money by not being obligated by paying any of the teacher's salary. There is a gentleman's agreement that the district will provide financial assistance and services where possible (i.e., available furniture, janitorial service, school psychologist, visiting teacher, maintenance and improvement of classroom environment, all in-direct [illegible] services normally available for servicing five year olds). Due to surplus funds accumulated through tuition and fundraising, a trust fund has been established through Cincinnati Public Schools.

Instructional Assistant

A full-time Instructional Assistant has served in the three to six class along with some parent volunteers. Initially, the dollars needed for this position was funded by Cincinnati Public Schools the same as a K to 12 class. The K to 12 teachers agreed to reduce the Instructional Assistant position to less than full time in order to increase the services needed in the 3 to six class.



Instructional Supplies and Equipment

Instructional supplies and equipment are primarily funded through fundraisers and tuition.

Prior to the opening of the first three to six class, local foundations and school fundraising projects enabled North Avondale to accrue over thirteen thousand dollars to aid start up cost. Needless to say, cooperation and support from the K to 12 teachers were necessary for program success. The school district provided necessary funds for equipping an approved Montessori classroom for five year olds.

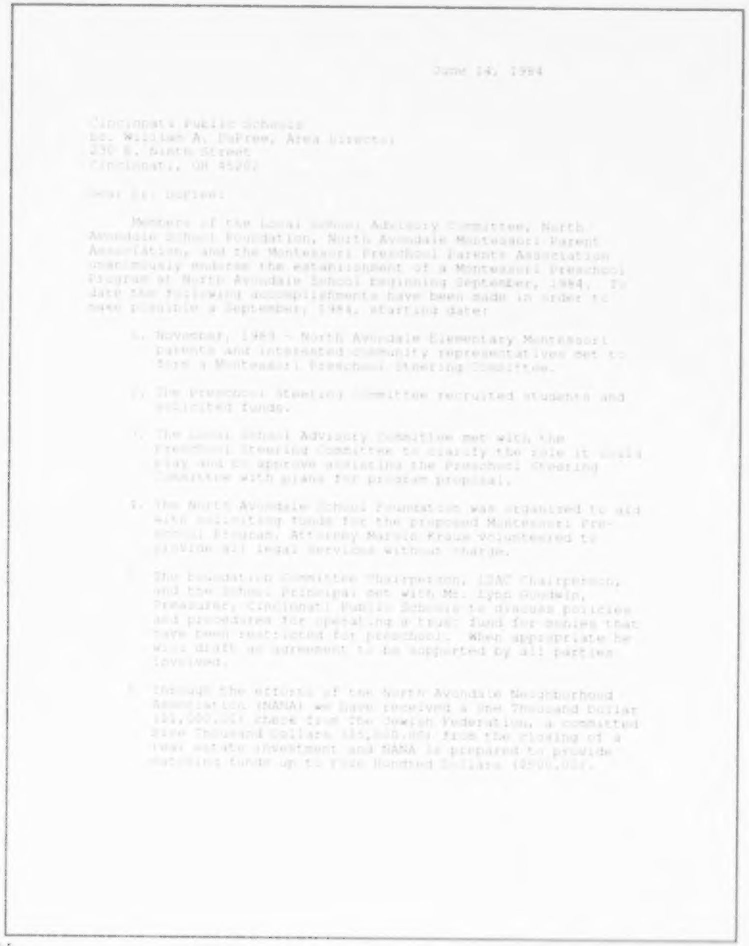
I opted to couple a fully fu[illegible]ed five-year-old class teacher with a tuition funded three to fo[illegible]year teacher. Together they shared students and resources. E[illegible] teacher received the same salary and benefits. Each teacher had a fully equipped classroom with a full-time Instructor Assistant.

Local School Project Manager

The assistant principal or a designee is necessary for managing three to six program enrollment, tuition, recruitment, scholarship applicants, and parent involvement.

Appendix 4: Process Paper, Developing the Site-Based Not-For-Profit Support Foundation — Cincinnati Public Schools, Cincinnati, Ohio

This is an early letter in the process of organizing a school foundation. The information is still pertinent today, although budget amounts are outdated.



June 14, 1984

Cincinnati Public Schools
Dr. William A. DuPree, Area Director
230 E. Ninth Street
Cincinnati, OH 45202

Dear Dr. DuPree:

Members of the Local School Advisory Committee, North Avondale School Foundation, North Avondale Montessori Parent Association, and the Montessori Preschool Parents Association unanimously endorse the establishment of a Montessori Preschool Program at North Avondale School beginning September, 1984. To date the following accomplishments have been made in order to make possible a September, 1984, starting date:

1. November, 1983 - North Avondale Elementary Montessori parents and interested community representatives met to form a Montessori Preschool Steering Committee.

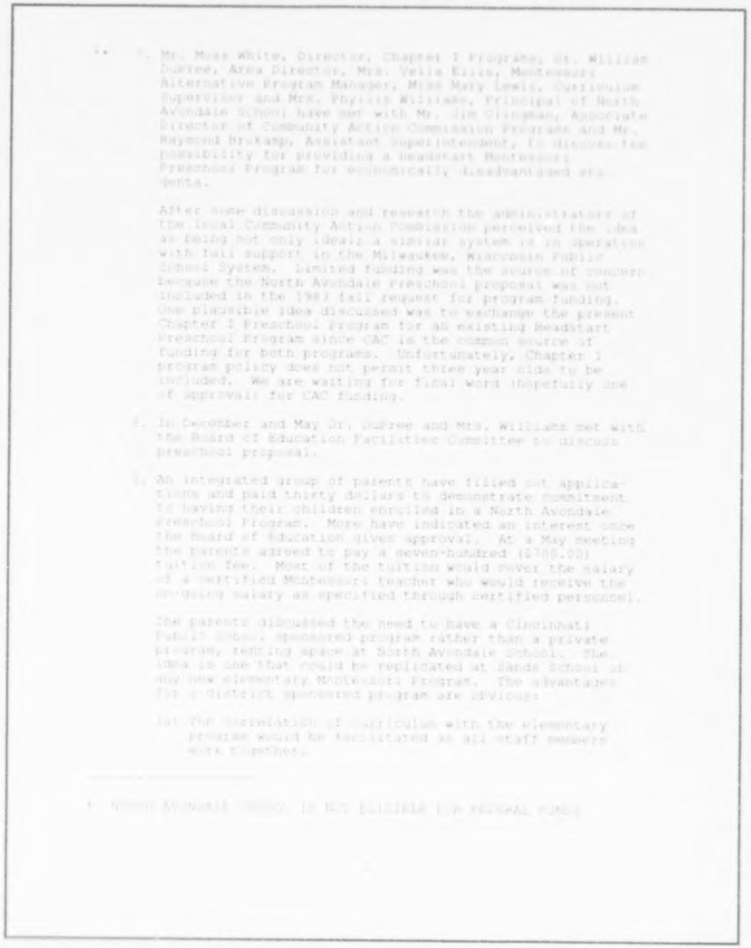
2. The Preschool Steering Committee recruited students and solicited funds.

3. The Local School Advisory Committee met with the Preschool Steering Committee to clarify the role it would play and to approve assisting the Preschool Steering Committee with plans for program proposal.

4. The North Avondale School Foundation was organized to aid with soliciting funds for the proposed Montessori Preschool Program. Attorney Marvin Kraus volunteered to provide all legal services without charge.

5. The Foundation Committee Chairperson, LSAC Chairperson, and the School Principal met with Mr. Lynn Goodwin, Treasurer, Cincinnati Public Schools to discuss policies and procedures for operating a trust fund for monies that have been restricted for preschool. When appropriate he will draft an agreement to be supported by all parties involved.

6. Through the efforts of the North Avondale Neighborhood Association (NANA) we have received a One Thousand Dollar ($1,000.00) check from the Jewish Federation, a committed Five Thousand Dollars ($5,000.00) from the closing of a real estate investment and NANA is prepared to provide matching funds up to Five Hundred Dollars ($500.00).



*7. Mr. Moss White, Director, Chapter I Programs, Dr. William DuPree, Area Director, Mrs. Vella Ellis, Montessori Alternative Program Manager, Miss Mary Lewis, Curriculum Supervisor and Mrs. Phyllis Williams, Principal of North Avondale School have met with Mr. Jim Clingman, Associate Director of Community Action Commission Programs and Mr. Raymond Brokamp, Assistant Superintendent, to discuss the possibility for providing a Headstart Montessori Preschool Program for economically disadvantaged students.

After some discussion and research the administrators of the local Community Action Commission perceived the idea as being not only ideal; a similar system is in operation with full support in the Milwaukee, Wisconsin Public School System. Limited funding was the source of concern because the North Avondale Preschool proposal was not included in the 1983 fall request for program funding. One plausible idea discussed was to exchange the present Chapter I Preschool Program for an existing Headstart Preschool Program since CAC is the common source of funding for both programs. Unfortunately, Chapter I program policy does not permit three year olds to be included. We are waiting for final word (hopefully one of approval) for CAC funding.

8. In December and May Dr. DuPree and Mrs. Williams met with the Board of Education Facilities Committee to discuss preschool proposal.

9. An integrated group of parents have filled out applications and paid thirty dollars to demonstrate commitment to having their children enrolled in a North Avondale Preschool Program. More have indicated an interest once the Board of Education gives approval. At a May meeting the parents agreed to pay a seven-hundred ($700.00) tuition fee. Most of the tuition would cover the salary of a certified Montessori teacher who would receive the prevailing salary as specified through certified personnel.

The parents discussed the need to have a Cincinnati Public School sponsored program rather than a private program, renting space at North Avondale School. The idea is one that could be replicated at Sands School or any new elementary Montessori Program. The advantages for a district sponsored program are obvious:

(a) The correlation of curriculum with the elementary program would be facilitated as all staff members work together.

---

* NORTH AVONDALE SCHOOL IS NOT ELIGIBLE FOR FEDERAL FUNDS

II. The involvement of preschool parents with existing school/parent community organizations would exist.

The integrated preschool Montessori Program would feed into the existing elementary Montessori program thus contributing to the desegregation goals.

III. Ultimately early childhood education would exist with possibilities of raising achievement scores on the elementary level.

Volunteers from the Preschool Parents Association met to interview Montessori teacher applicants [illegible] one of whom would be funded for a Headstart [illegible]. These teachers are anxiously awaiting for Board of Education approval because these outstanding talents are being sought elsewhere. For this reason, time is of the essence.

After meeting and/or discussing with various [illegible] Board of Education members, and Central Office Administrators, the [illegible] group has been [illegible] the idea of a Montessori preschool program [illegible] September [illegible] program implementation.

[illegible]

CINCINNATI PUBLIC SCHOOLS

[illegible]

- provide opportunities, evaluation of program and student achievement.
- provide transportation through DAC funding for economically disadvantaged children and charge a fee for tuition paying parents.
- seek and provide funds using state and federal grants that would allow for innovative preschool implementation.

NORTH AVONDALE SCHOOL

PRINCIPAL would coordinate all parent-school community groups, administer the preschool program and communicate progress with Central Office Administrators.

THE LOCAL ADVISORY COMMITTEE would support program implementation, advise as a source that correlates all interest group activities; advise in order to perpetuate team work without duplication of roles; prioritize needs for disbursement of funds; assist Foundation with seeking and monitoring of funds and providing quality control for evaluation of and auditing of contribution fund, resources and uses). The LSAC would annually conduct goal setting and program evaluation activities.

THE NORTH AVONDALE FOUNDATION COMMITTEE

- Review needs for additional funds.
- Seek funds.
- Monitor and manage accounting system for incoming monies.
- Respond to LSAC in providing quality control through on-going evaluation of funding sources, and uses as planned.
- Communicate with District Treasurer regarding policies and procedures for use of Trust Fund earmarked for Preschool.
- Receive and record tuition or funds received by Treasurer of Preschool Parents Association.

NORTH AVONDALE PRESCHOOL PARENTS ASSOCIATION

- Assist Foundation Committee with seeking funds.
- Volunteer with classroom assistance and parent education. Assist teacher with instructional needs.

- Serve as representatives on the LSAC, Foundation Committee and the North Avondale Montessori Parents Association.
- Assist with recruitment.
- Executive Committee established to manage program needs and make recommendations to LSAC and Foundation Committee.

The support groups for the Montessori Preschool agree there should be provisions made to include low economic students whose parents can't afford the seven hundred dollar ($700.00) tuition. The one concern is how can this be done the first year if there aren't funds available though the Community Action Commission for Headstart?

The following possibilities listed in priority have been considered:

- Total funding through CAC for Headstart A.M. and P.M. classes.
- Partial funding from CAC for 10 low economic students.

  The North Avondale School Foundation would raise as much as it can by September (including $1,000.00 from the Jewish Federation plus the committed $5,000.00 through Mr. Weiland) and CPS would advance enough money to cover remainder of the needed seven thousand dollar ($7,000.00). Mr. Weiland is actively working to attain a goal of $20,000.00 for the preschool by the end of 1984. This would allow for financial assistance using Headstart economic scale guidelines.

- Provide a sliding scale tuition using Headstart economic guidelines.
- Provide Tuition Free Scholarship of $7,000.00 to cover cost for 10 low income students. Administrators screen applications.

The proposed budget for Headstart funding recommends a minimum of [illegible] which includes transportation. In order to facilitate integration of low economic students, transportation may be necessary. During the first year of the program, low economic students within walking distance and who may have access to transportation could be recruited. This would allow time for a new proposal to be submitted through CAC for 1985-86 funding.

Recruitment for at least 10 low economic students who will need and benefit by getting to school the first year should be possible through CAC partial funding, sliding scale tuition, or scholarships.

The Proposed Minimum Budget for a single class in September, 1984:

Teacher	$20,000 plus fringe benefit (20% of salary)
Instructor Assistant (or parent volunteers)	$8,000.00 plus fringe benefits
Equipment	$1,000.00
Materials	$3,300.00
Scholarships	$7,000.00
TOTAL	$42,000.00 with Instructor Assistant $34,000.00 with Parent Volunteer

Respectfully Submitted,

Principal, North Avondale School

Local School Advisory Committee

North Avondale Montessori Preschool Parents Association

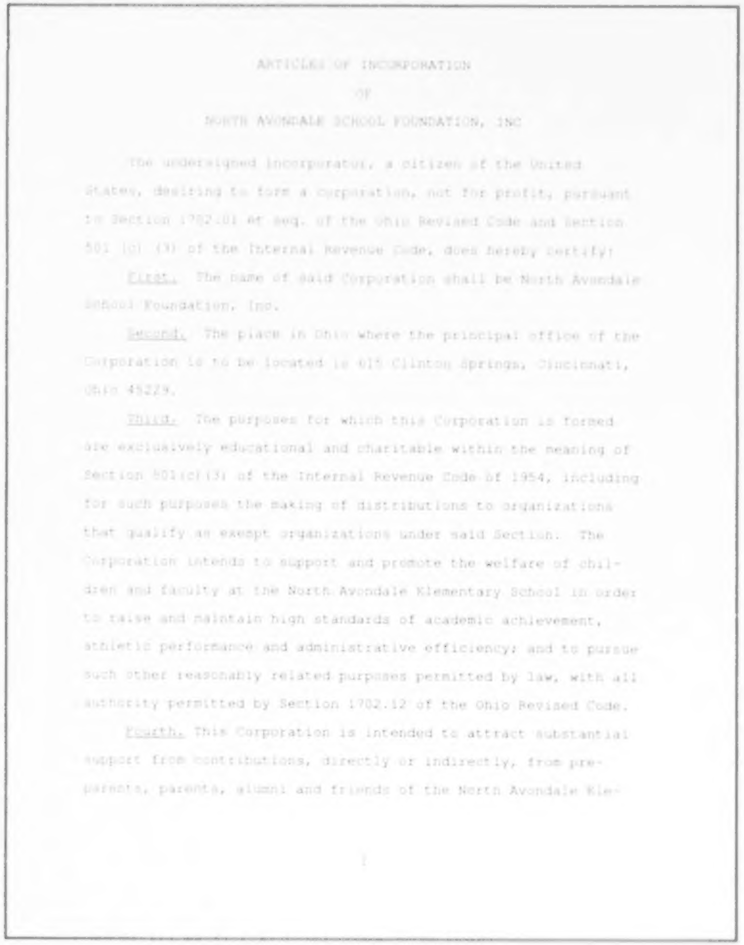
North Avondale Montessori Parents Association

North Avondale Foundation Committee

North Avondale Neighborhood Association

Appendix 5: Articles of Incorporation and By-Laws — North Avondale Public School Foundation, Cincinnati Public Schools, Cincinnati, Ohio

Legal documents providing the purpose and framework of the school foundation can be utilized for general school purposes with the Montessori preschool as one facet.



ARTICLES OF INCORPORATION
OF
NORTH AVONDALE SCHOOL FOUNDATION, INC

The undersigned incorporator, a citizen of the United States, desiring to form a corporation, not for profit, pursuant to Section 1702.01 et seq. of the Ohio Revised Code and Section 501 (c) (3) of the Internal Revenue Code, does hereby certify:

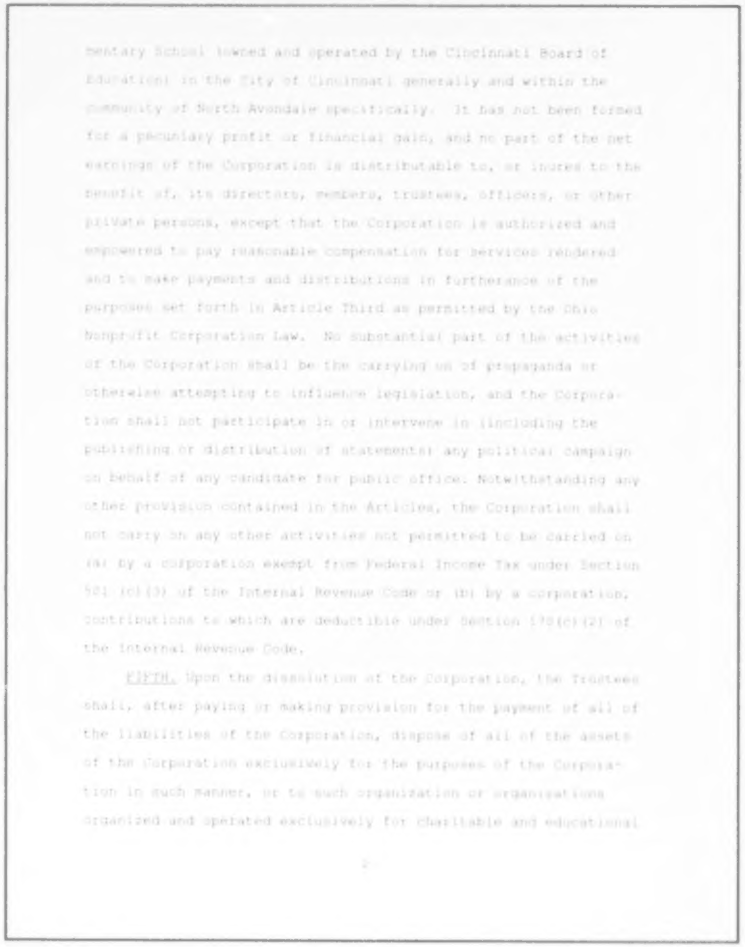
First. The name of said Corporation shall be North Avondale School Foundation, Inc.

Second. The place in Ohio where the principal office of the Corporation is to be located is 615 Clinton Springs, Cincinnati, Ohio 45229.

Third. The purposes for which this Corporation is formed are exclusively educational and charitable within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1954, including for such purposes the making of distributions to organizations that qualify as exempt organizations under said Section. The Corporation intends to support and promote the welfare of children and faculty at the North Avondale Elementary School in order to raise and maintain high standards of academic achievement, athletic performance and administrative efficiency; and to pursue such other reasonably related purposes permitted by law, with all authority permitted by Section 1702.12 of the Ohio Revised Code.

Fourth. This Corporation is intended to attract substantial support from contributions, directly or indirectly, from pre-parents, parents, alumni and friends of the North Avondale Ele-

1



mentary School (owned and operated by the Cincinnati Board of Education) in the City of Cincinnati generally and within the community of North Avondale specifically. It has not been formed for a pecuniary profit or financial gain, and no part of the net earnings of the Corporation is distributable to, or inures to the benefit of, its directors, members, trustees, officers, or other private persons, except that the Corporation is authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Third as permitted by the Ohio Nonprofit Corporation Law. No substantial part of the activities of the Corporation shall be the carrying on of propaganda or otherwise attempting to influence legislation, and the Corporation shall not participate in or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provision contained in the Articles, the Corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from Federal Income Tax under Section 501 (c)(3) of the Internal Revenue Code or (b) by a corporation, contributions to which are deductible under Section 170(c)(2) of the Internal Revenue Code.

FIFTH. Upon the dissolution of the Corporation, the Trustees shall, after paying or making provision for the payment of all of the liabilities of the Corporation, dispose of all of the assets of the Corporation exclusively for the purposes of the Corporation in such manner, or to such organization or organizations organized and operated exclusively for charitable and educational

2

purposes as shall at the time qualify as an exempt organization or organizations under Section 501(c)(3) of the Internal Revenue Code, as the Board of Trustees shall determine. Any such assets not so disposed of shall be distributed to the Cincinnati Board of Education.

SIXTH. The following persons shall serve said Corporation as [illegible] until the first annual meeting or [illegible] [illegible] [illegible] [illegible]:

Name Address

SEVENTH. Whenever provisions of the Internal Revenue Code of [illegible] are referred to in these Articles, they shall include future corresponding provisions of either Code or of any similar body of laws.

IN WITNESS WHEREOF, I have hereunto subscribed my name at Cincinnati, Ohio this ____ day of ____________, 198_.

____

John Doe, Incorporator

ORIGINAL APPOINTMENT OF STATUTORY AGENT

The undersigned, being at least a majority of the incorporators of NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC. hereby appoint JOHN DOE, a natural person resident in this state, upon whom any process, notice or demand required or permitted by statute to be served upon the corporation may be served. His complete address is 311 [illegible] Building, 105 East Fourth Street, Cincinnati, Hamilton County, Ohio 45202.

____

John Doe

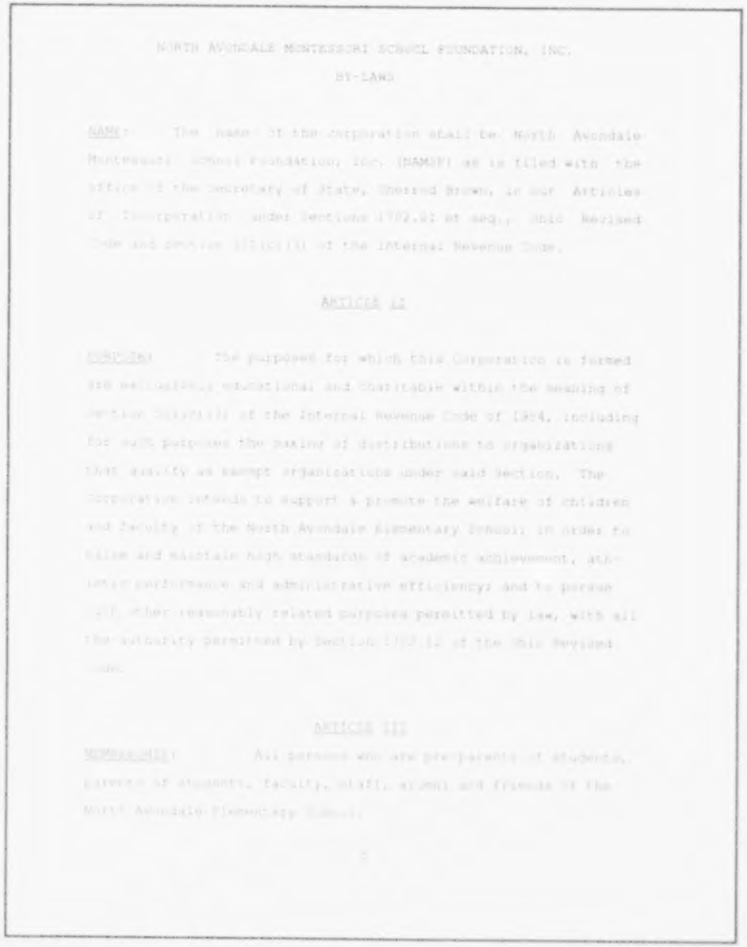
Cincinnati, Ohio
December 16, 1983

NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC.

Gentlemen: I hereby accept appointment as agent of your corporation upon whom process, tax notices or demands may be served.

____

John Doe



NORTH AVONDALE MONTESSORI SCHOOL FOUNDATION, INC.

BY-LAWS

NAME: The name of the corporation shall be North Avondale Montessori School Foundation, Inc. (NAMSF) as is filed with the office of the Secretary of State, Sherrod Brown, in our Articles of Incorporation under Sections 1702.01 et seq., Ohio Revised Code and Section 501(c)(3) of the Internal Revenue Code.

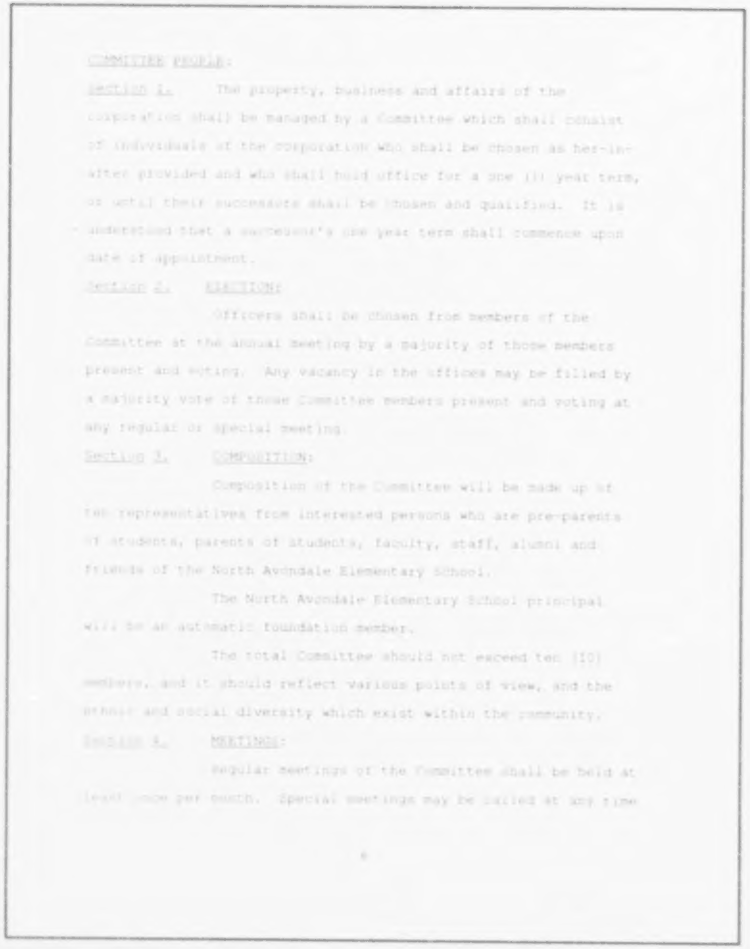
ARTICLE II

PURPOSE: The purposes for which this Corporation is formed are exclusively educational and charitable within the meaning of Section 501(c)(3) of the Internal Revenue Code of 1954, including for such purposes the making of distributions to organizations that qualify as exempt organizations under said Section. The Corporation intends to support & promote the welfare of children and faculty of the North Avondale Elementary School; in order to raise and maintain high standards of academic achievement, athletic performance and administrative efficiency; and to pursue all other reasonably related purposes permitted by law, with all the authority permitted by Section 1702.12 of the Ohio Revised Code.

ARTICLE III

MEMBERSHIP: All persons who are pre-parents of students, parents of students, faculty, staff, alumni and friends of the North Avondale Elementary School.

5



COMMITTEE PEOPLE:

Section 1. The property, business and affairs of the corporation shall be managed by a Committee which shall consist of individuals of the corporation who shall be chosen as hereinafter provided and who shall hold office for a one (1) year term, or until their successors shall be chosen and qualified. It is understood that a successor's one year term shall commence upon date of appointment.

Section 2. ELECTION:

Officers shall be chosen from members of the Committee at the annual meeting by a majority of those members present and voting. Any vacancy in the offices may be filled by a majority vote of those Committee members present and voting at any regular or special meeting.

Section 3. COMPOSITION:

Composition of the Committee will be made up of ten representatives from interested persons who are pre-parents of students, parents of students, faculty, staff, alumni and friends of the North Avondale Elementary School.

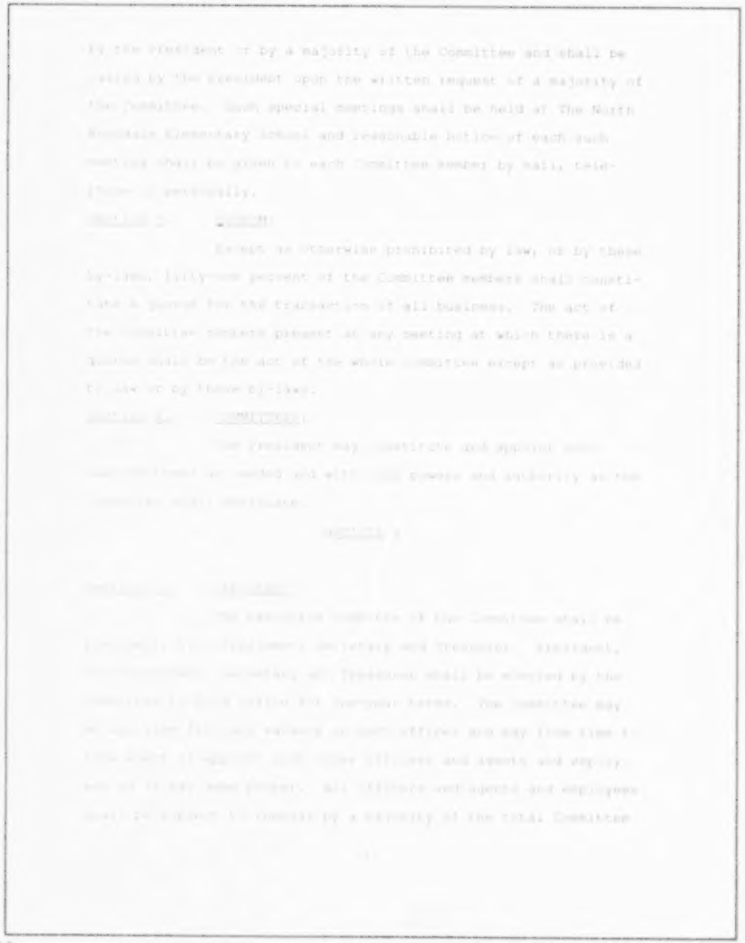
The North Avondale Elementary School principal will be an automatic foundation member.

The total Committee should not exceed ten (10) members, and it should reflect various points of view, and the ethnic and social diversity which exist within the community.

Section 4. MEETINGS:

Regular meetings of the Committee shall be held at least once per month. Special meetings may be called at any time

6



by the President or by a majority of the Committee and shall be called by the President upon the written request of a majority of the Committee. Such special meetings shall be held at The North [illegible] Elementary School and reasonable notice of each such meeting shall be given to each Committee member by mail, telephone or personally.

Section [illegible]. QUORUM:

Except as otherwise prohibited by law, or by these by-laws, fifty-one percent of the Committee members shall constitute a quorum for the transaction of all business. The act of the Committee members present at any meeting at which there is a quorum shall be the act of the whole Committee except as provided by law or by these by-laws.

Section [illegible]. COMMITTEES:

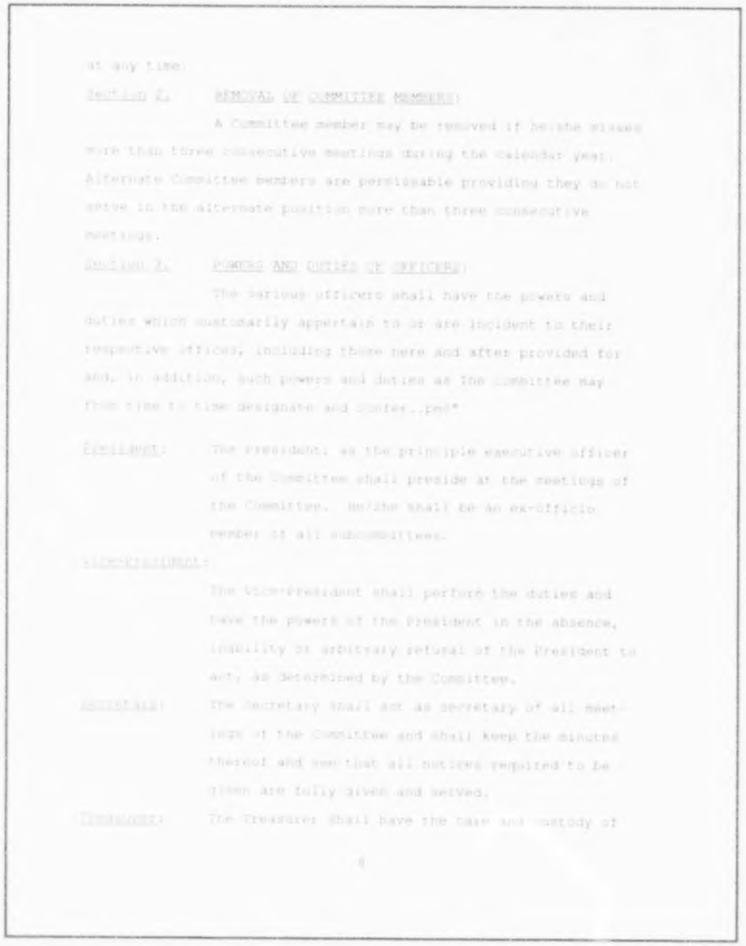
The President may constitute and appoint such committees as needed and with such powers and authority as the Committee shall constitute.

ARTICLE [illegible]

Section [illegible]. OFFICERS:

The executive officers of the Committee shall be President, Vice-President, Secretary and Treasurer. President, Vice-President, Secretary and Treasurer shall be elected by the Committee to such office for two-year terms. The Committee may at any time fill any vacancy in such offices and may from time to time elect or appoint such other officers and agents and employees as it may deem proper. All officers and agents and employees shall be subject to removal by a majority of the total Committee

-7-



at any time.

Section 2. REMOVAL OF COMMITTEE MEMBERS:

A Committee member may be removed if he/she misses more than three consecutive meetings during the calendar year. Alternate Committee members are permissable providing they do not serve in the alternate position more than three consecutive meetings.

Section 3. POWERS AND DUTIES OF OFFICERS:

The various officers shall have the powers and duties which customarily appertain to or are incident to their respective offices, including those here and after provided for and, in addition, such powers and duties as the Committee may from time to time designate and confer..ped*

President: The President: as the principle executive officer of the Committee shall preside at the meetings of the Committee. He/She shall be an ex-officio member of all subcommittees.

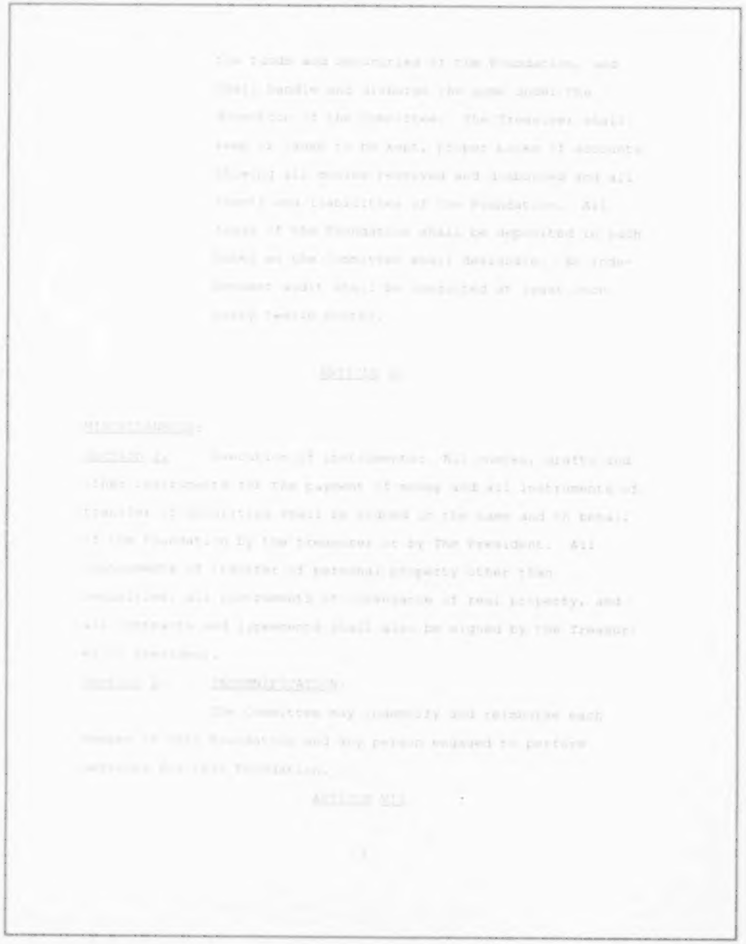
Vice-President:

The Vice-President shall perform the duties and have the powers of the President in the absence, inability or arbitrary refusal of the President to act, as determined by the Committee.

Secretary: The Secretary shall act as secretary of all meetings of the Committee and shall keep the minutes thereof and see that all notices required to be given are fully given and served.

Treasurer: The Treasurer shall have the care and custody of

-8-



the funds and securities of the Foundation, and shall handle and disburse the same under the direction of the Committee. The Treasurer shall keep or cause to be kept, proper books of accounts showing all monies received and disbursed and all assets and liabilities of the Foundation. All funds of the Foundation shall be deposited in such banks as the Committee shall designate. An independent audit shall be conducted at least once every twelve months.

ARTICLE XI

MISCELLANEOUS:

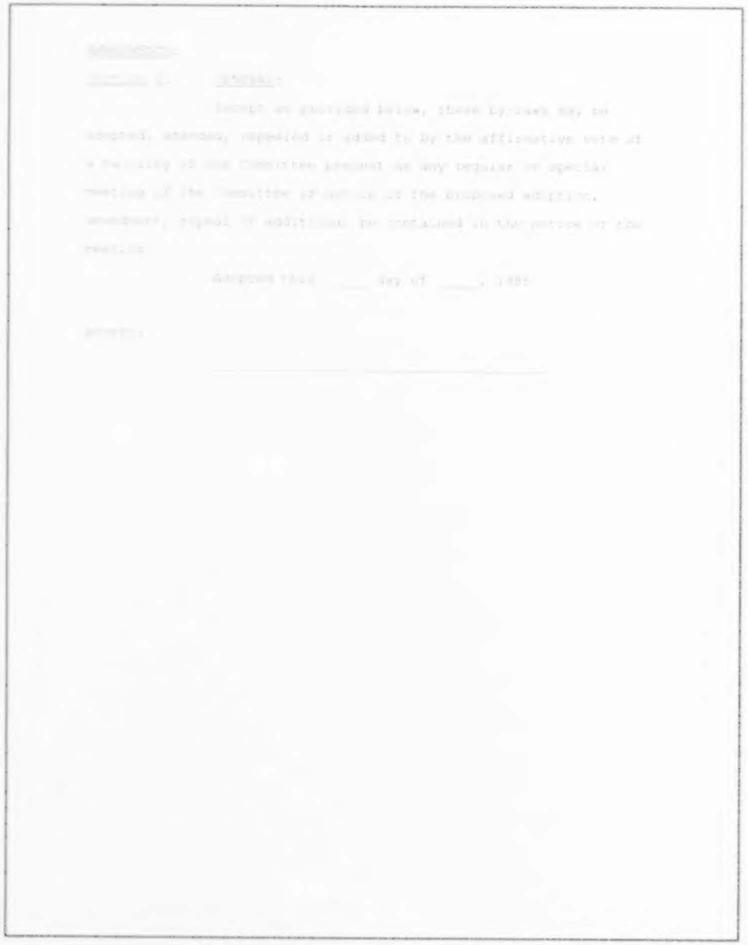
SECTION 1. Execution of instruments: All checks, drafts and other instruments for the payment of money and all instruments of transfer of securities shall be signed in the name and on behalf of the Foundation by the Treasurer or by the President. All instruments of transfer of personal property other than securities, all instruments of conveyance of real property, and all contracts and agreements shall also be signed by the Treasurer or President.

SECTION 2. INDEMNIFICATION:

The Committee may indemnify and reimburse each member of this Foundation and any person engaged to perform services for this Foundation.

ARTICLE XII

[illegible]



AMENDMENTS:

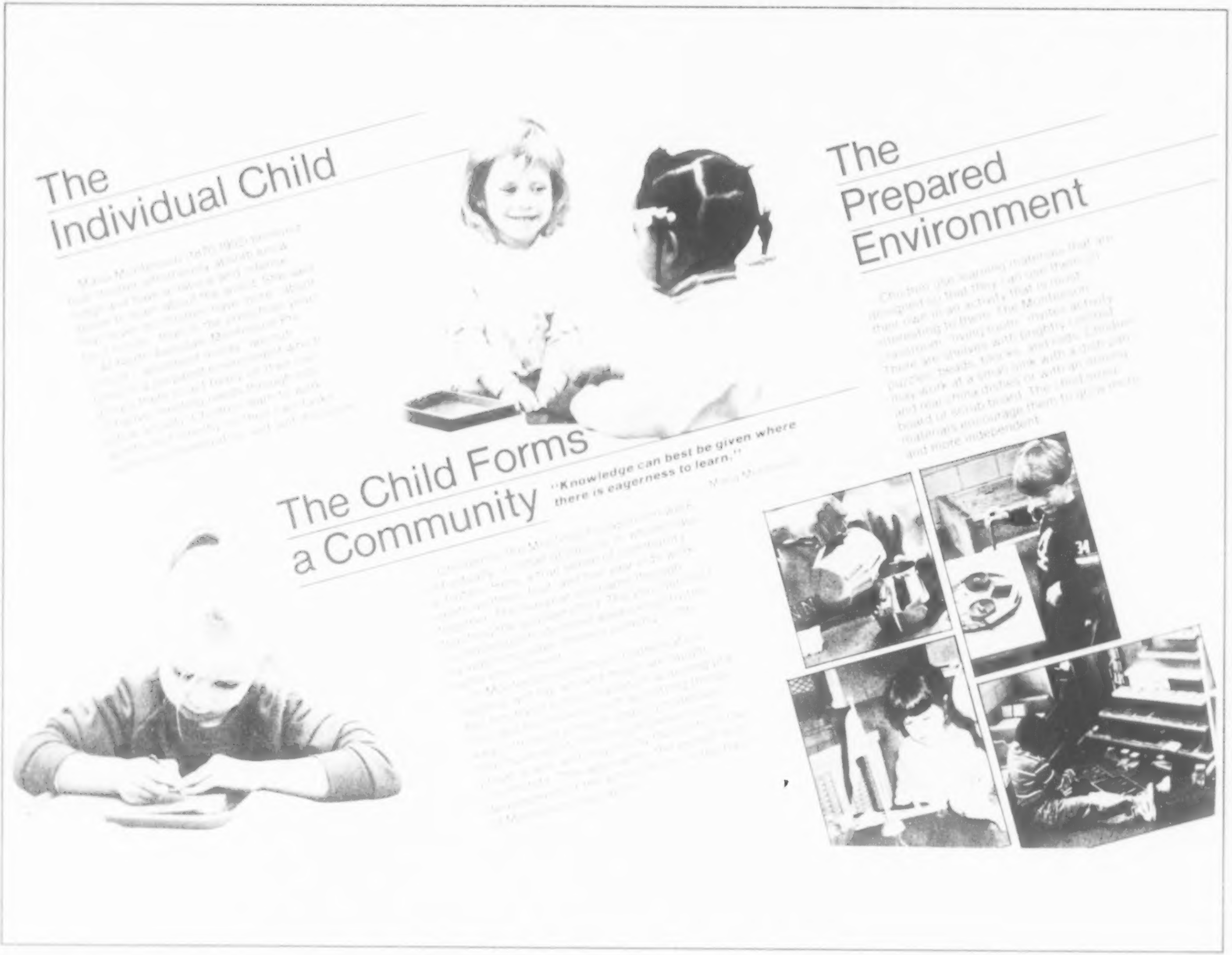
SECTION 1. GENERAL:

Except as provided below, these by-laws may be adopted, amended, repealed or added to by the affirmative vote of a majority of the Committee present at any regular or special meeting of the Committee if notice of the proposed adoption, amendment, repeal or additions be contained in the notice of the meeting.

ADOPTED this ____ day of ____, 1985

ATTEST:

____



The
Individual Child

The Child Forms
a Community

"Knowledge can best be given where there is eagerness to learn."

The
Prepared
Environment

Appendix 6: Promotional Brochure offering Montessori Preschool Options — Cincinnati Public Schools, Cincinnati, Ohio

Since the preschool is privately operated it utilizes public relations materials designed to compete against other magnet options and privately operated preschools. This program option is, however, part of the district operations and is housed in a public school building.

Teachers and Parents

"It is not enough for the teacher to restrict herself to loving and understanding the child; she must first love and understand the universe."

—Maria Montessori

North Avondale Montessori Preschool teachers not only have an Ohio Teaching Certificate, but also have preschool Montessori certification.

The Montessori teacher has a deep sense of respect for the child's total being. Since emphasis is placed on the child as his or her own timekeeper, the Montessori teacher allows for a natural pace which fosters learning retention and creativity.

Montessori works best when parents are involved in their child's education. Parents and teachers work together to support and follow the whole Montessori process through open and ongoing communication.

Registration

North Avondale Montessori Preschool is for children of three and four years of age. Morning and afternoon sessions, 2-1/2 hours long each, are offered. A nonrefundable application fee, a copy of the birth certificate, and an update of immunization records must be presented upon request before the child will be accepted into the program. Optional payment methods and [illegible] are available. For an application, please contact the school: 221-3478.

Information regarding transportation [illegible] may be obtained through the school office.

The school year calendar is the same as that of the Cincinnati Public Schools with few exceptions. Parents are notified in advance of any exceptions.

North Avondale Montessori Preschool
615 Clinton Springs Avenue
Cincinnati, Ohio 45229
(513) 221-3478

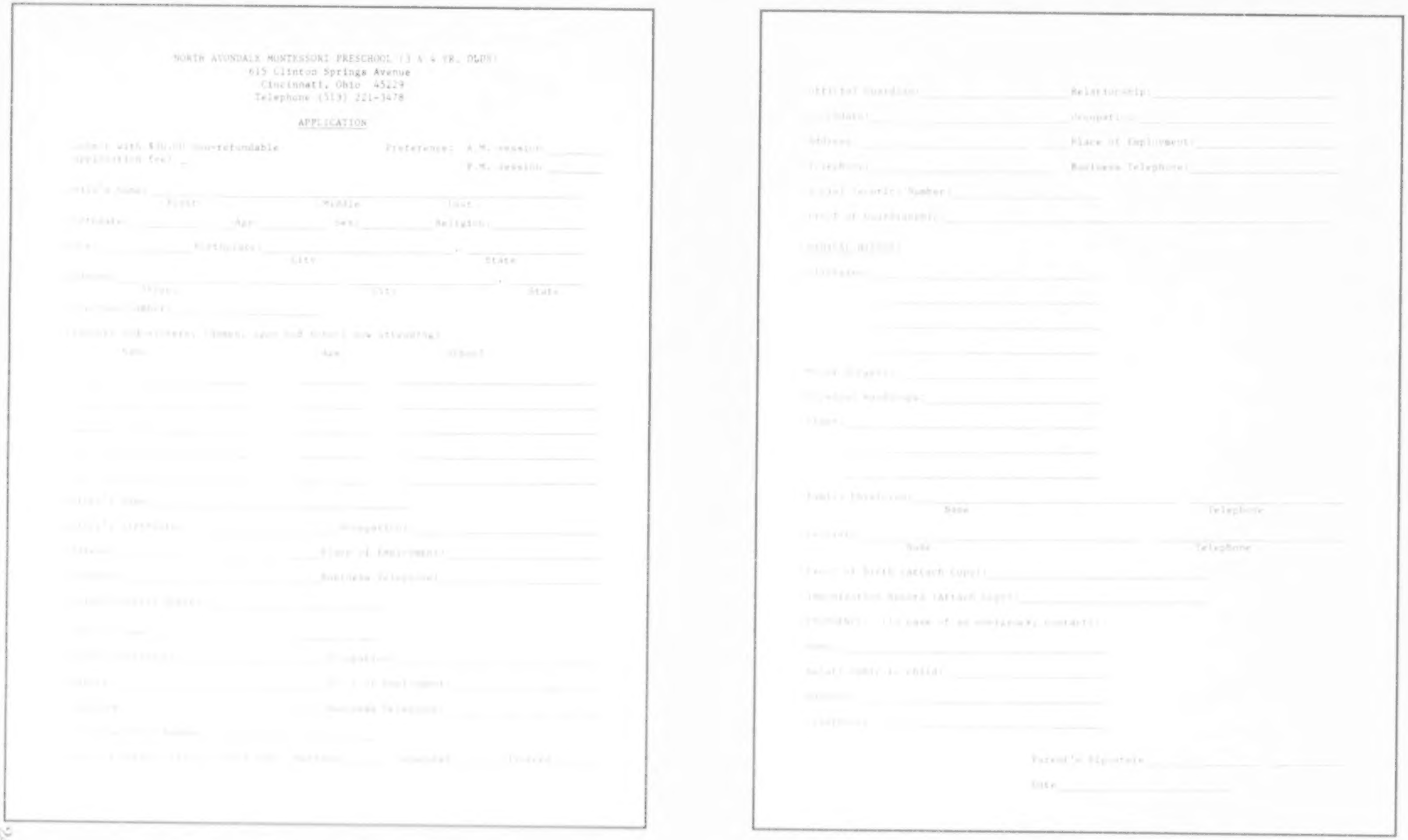
NORTH AVONDALE MONTESSORI PRESCHOOL

"The child should love everything that he learns for his mental and emotional growth are linked. Whatever is presented to him must be beautiful and clear."

—Maria Montessori

Appendix 7: Application Form for Admission — North Avondale Montessori Preschool, Cincinnati Public Schools, Cincinnati, Ohio

This is a typical application form used by a private Montessori school within the public system.



NORTH AVONDALE MONTESSORI PRESCHOOL (3 & 4 YR. OLDS)
615 Clinton Springs Avenue
Cincinnati, Ohio 45229
Telephone (513) 221-3478

APPLICATION

Submit with $10.00 Non-refundable application fee: ___ Preference: A.M. session ___ P.M. session ___

Child's Name: ___ (First) (Middle) (Last)

Birthdate: ___ Age ___ Sex: ___ Religion: ___

Race: ___ Birthplace: ___ City, ___ State

Address: ___ Street ___ City, ___ State

Telephone Number: ___

Brothers and sisters: (Names, ages and school now attending)

Name ___ Age ___ School ___

Father's Name: ___

Father's Birthdate: ___ Occupation: ___

Address: ___ Place of Employment: ___

Telephone: ___ Business Telephone: ___

Social Security Number: ___

Mother's Name: ___

Mother's Birthdate: ___ Occupation: ___

Address: ___ Place of Employment: ___

Telephone: ___ Business Telephone: ___

Social Security Number: ___

Parents' Marital Status: Married ___ Separated ___ Divorced ___

Official Guardian: ___ Relationship: ___

Birthdate: ___ Occupation: ___

Address: ___ Place of Employment: ___

Telephone: ___ Business Telephone: ___

Social Security Number: ___

Proof of Guardianship: ___

MEDICAL HISTORY

Illnesses: ___

Major Surgery: ___

Physical Handicaps: ___

Fears: ___

Family Physician: ___ Name ___ Telephone

Dentist: ___ Name ___ Telephone

Proof of Birth (attach copy): ___

Immunization Record (attach copy): ___

EMERGENCY: (In case of an emergency, contact):

Name: ___

Relationship to child: ___

Address: ___

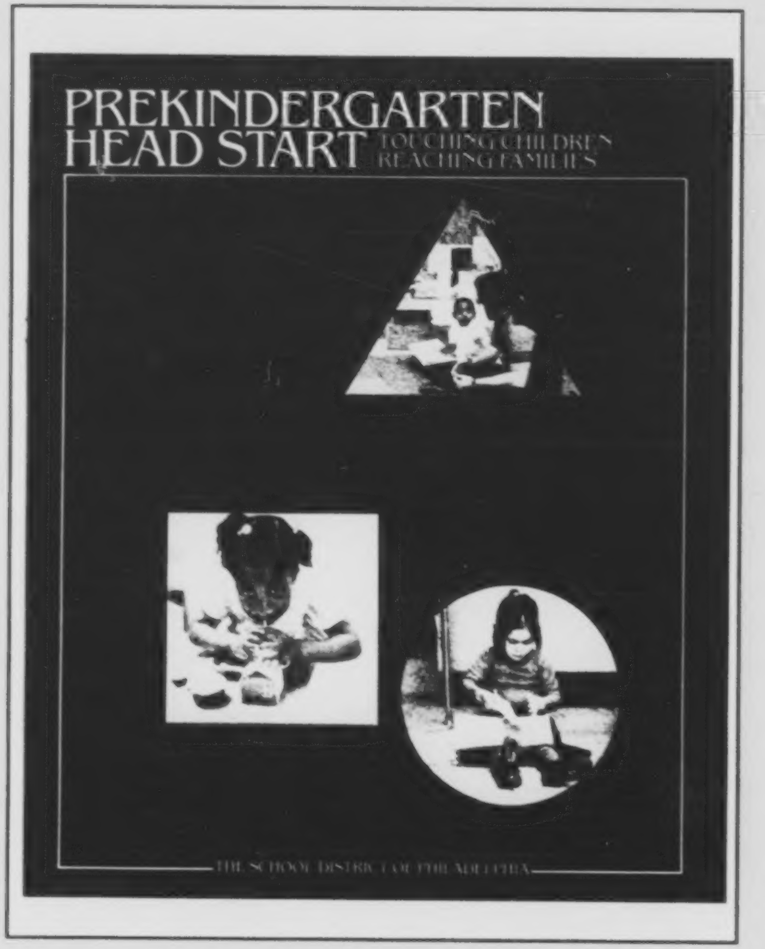
Telephone: ___

Parent's Signature ___

Date ___

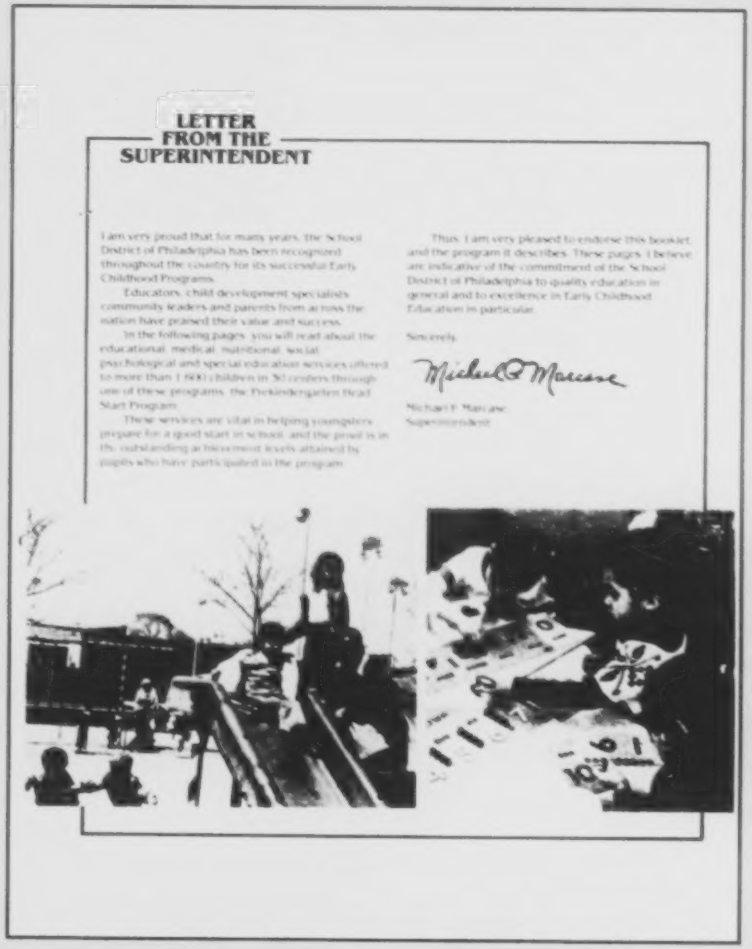
Appendix 8: Pre-Kindergarten Brochures — Philadelphia and Milwaukee Public Schools

Excellent graphic presentations of preschool options, including Montessori supported by Headstart funds. This sample is included to show how the Montessori preschool option can be incorporated into Headstart programming and can be selected as an option among many.



PREKINDERGARTEN
HEAD START
TOUCHING CHILDREN
REACHING FAMILIES

THE SCHOOL DISTRICT OF PHILADELPHIA



LETTER FROM THE SUPERINTENDENT

I am very proud that for many years, the School District of Philadelphia has been recognized throughout the country for its successful Early Childhood Programs.

Educators, child development specialists, community leaders and parents from across the nation have praised their value and success.

In the following pages, you will read about the educational, medical, nutritional, social, psychological and special education services offered to more than 1,600 children in 30 centers through one of these programs, the Prekindergarten Head Start Program.

These services are vital in helping youngsters prepare for a good start in school, and the proof is in the outstanding achievement levels attained by pupils who have participated in the program.

Thus, I am very pleased to endorse this booklet and the program it describes. These pages, I believe, are indicative of the commitment of the School District of Philadelphia to quality education in general and to excellence in Early Childhood Education in particular.

Sincerely,

Michael P. Marcase

Michael P. Marcase
Superintendent

LETTER FROM THE ASSOCIATE SUPERINTENDENT FOR EARLY CHILDHOOD EDUCATION

[illegible]

The School District is grateful to all of these persons, including our funding agent, PAAC, for [illegible] the rights of children.

As a school system working to develop human resources, we must tap the resources offering the greatest promise for bettering the society in which we live: our children. Children are the greatest resource that we have to offer because they are [illegible] future.

We are proud to [illegible] Prekindergarten Head Start [illegible]

Constance E. Clayton
Associate Superintendent
Early Childhood Education

TABLE OF CONTENTS

2 [illegible]
3 EDUCATION
7 HEALTH
7 NUTRITION
8 SOCIAL SERVICES
8 PARENT INVOLVEMENT
10 [illegible]
11 [illegible]
11 [illegible]

PREPARED BY THE OFFICE OF PREKINDERGARTEN HEAD START / 1980-1981

PROFILE PREKINDERGARTEN HEAD START

Prekindergarten Head Start provides a developmental, educational program for more than 1,600 three- and four-year-old children as well as a broad support system for their parents. The program's goal is to help overcome the persistent negative effects of economic disadvantage. An environment rich in materials and personnel can go a long way toward developing individuals capable of operating at their highest level of intellectual, social and occupational competence.

Families are served at 30 centers located in elementary schools, churches, and community centers throughout Philadelphia. They are open daily from 8:45 to 3:00 and follow the same calendar as the Philadelphia public schools. Each center's instructional program is based upon one of five models, all widely recognized for their effectiveness with young children. Because these instructional models are compatible with our local kindergarten programs, Prekindergarten Head Start children are assured the greatest degree of learning continuity.

In addition to their instruction, children are provided breakfast, lunch, and snacks and nutritional information about the food they are eating. Students may also participate in a music appreciation program; some may even choose to study the violin. Medical and dental services, as well as social and psychological support services, are available. Special programming and a summer camp experience are directed at children with special needs, who make up ten percent of Prekindergarten Head Start enrollment.

The objectives of Prekindergarten Head Start are specifically targeted at children, parents and the community.

FOR CHILDREN

- To provide daily living experiences promoting their total health and well-being.
- To provide services promoting both their physical and psychological health.
- To meet their nutritional needs.
- To identify and remediate any emotional, physical, and learning problems.
- To stimulate and develop positive attitudes toward themselves and others.
- To improve their understanding and use of language.
- To improve their perceptual and auditory discrimination.
- To develop and improve their motor skills.
- To develop their social and academic readiness for kindergarten.

FOR PARENTS

- To provide services enabling them to make more effective use of school community resources.
- To provide them with information and techniques to foster the growth and development of children.
- To provide them with health and nutritional information, training, and services.
- To increase positive interaction between them, the community, and the school.
- To help them develop and sustain services and programs relevant for carrying out parental responsibilities.
- To develop and support leadership.
- To encourage them to initiate and participate in self development activities.

FOR COMMUNITY

- To improve the level of living by fostering cooperative action to achieve program goals.
- To encourage, support, and promote organizations and institutions devoted to Prekindergarten Head Start goals.
- To support and promote civic, social, and community action for the general welfare.

THE MAJOR COMPONENTS OF PREKINDERGARTEN HEAD START

To facilitate providing services to parents and children, Prekindergarten Head Start encompasses six major components.

■ EDUCATION ■ HEALTH ■ NUTRITION ■ SOCIAL SERVICES ■ PARENT INVOLVEMENT ■ RESEARCH AND EVALUATION

1 EDUCATION

Prekindergarten Head Start's educational program is designed to meet each child's individual needs.

Every child in Prekindergarten Head Start receives a variety of learning experiences to foster physical, intellectual, social and emotional growth. Children participate in indoor and outdoor play and are introduced to the concepts of words and numbers. They are encouraged to express their feelings, to develop self-confidence, and to work and play comfortably with others. While the educational program is geared to take account of individual differences, it also recognizes the importance of serving the community's diversity of ethnic and cultural groups.

Prekindergarten Head Start teachers are State certified and usually have advanced training in child development and early childhood education. Staff training is on-going with special emphasis on working with handicapped children. The ratio of adults to children is high at all centers.

Five instructional models are offered in the educational component, as well as the opportunity to study violin and participate in music appreciation programs.

3

4

EDUCATION

BANK STREET MODEL

The Bank Street Model emphasizes the developmental approach. Its ultimate objective is to enable children, in their early school years, to become deeply involved and self-directed in their learning. This requires, first, a positive self image specifically as a learner and more generally as a person.

Prekindergarten Head Start classrooms are conducive to such growth and offer children a variety of vital, constructive, challenging and pleasurable experiences in which they participate selectively. The classroom is organized into activity areas, including housekeeping, science, sand, water, library corner, woodworking, and quiet table games. Cooking is an important element of this model. The children help "read" the ingredients needed for food preparation and measure the required amounts. These cooking experiences provide opportunities for learning arithmetic, reading and nutrition, but they also allow for socialization and enjoyment. Bank Street teachers are encouraged to create materials, instead of using commercial products, and to involve parents in the process.

BEHAVIOR ANALYSIS MODEL

The Behavior Analysis Model is academically based, with emphasis on development in the areas of reading, writing, math, and social behavior. Learning is encouraged through positive reinforcement techniques. Children are taught in small groups during "Earn Periods." Correct responses and social behavior are reinforced or rewarded by giving children tokens and verbal praise. The tokens are later exchanged for an activity of the child's choice during "Spend Periods," thus utilizing extrinsic motivation. Teachers, aides, and parents are trained to work together and coordinate this curriculum. Consultants visit the centers periodically for follow-up meetings and evaluation of model implementation. Parents play an important role in the Behavior Analysis Model; a number of them are also trained to become parent scholars on a paid basis. The model uses programmed, commercially prepared materials.

CHILD DEVELOPMENT MODEL

The Child Development Model is often called the Open Classroom Model. It takes its theoretical base from the work of Jean Piaget, who believed that play is the child's way of learning. The model uses an eclectic approach in which teachers are free to create and develop materials appropriate for the needs and interests of the children. The fullest development of the whole child is stressed. Classrooms are "rich environments" where children may choose from a variety of activities, spend as much time at them as they wish, and then move on to others. Exploration, problem solving, and discovery are basic to the Child Development Model.

The role of the teacher is to be aware of each student's progress and learning style and to guide him/her to activities and materials best suited to individual growth, development, and interest.

MONTESSORI MODEL

The Montessori Model places its emphasis on teaching children to teach themselves. Materials are not used before the teacher recognizes the child's readiness for them and demonstrates their use to the child. Sometimes one child may learn from observing another, and such imitative learning is also encouraged. Once children have been introduced to materials, they may use them whenever they wish for as long as they wish. When one activity is mastered, another is shown; children set their own pace. Achievement may be acknowledged by the teacher, but inner satisfaction is the [illegible]

Montessori materials are divided into three categories:

Practical Life Exercises: Table washing, shoe polishing, silver polishing, rice pouring, buttoning, zipping, and lacing.

Sensorial Materials: Examples are pink Tower, color tablets, geometric solids, sandpaper letters and numbers. These are used to promote cognitive growth by providing children the opportunity to manipulate concrete objects.

Academic Materials: Aids to the development of writing, arithmetic, reading, geography, and botany, make up this category.

Montessori classrooms usually do not have a set schedule. The teacher becomes a "director" or observer, responding to the child's needs and interests.

RESPONSIVE ENVIRONMENT MODEL

The Responsive Environment Model focuses on the rewards students receive from operating in an environment which responds constantly and consistently to what they are doing. In such an environment, where there are immediate and relevant consequences for what the learner does, the child learns by doing. The term "responsive" requires that all adults who interact with the children be sensitive to and aware of the feelings, attitudes, needs and interests of each child and his/her family. Specifically designed educational materials are an important part of this model. It stresses a carefully structured educational setting with detailed attention to all aspects of the learning environment.

VIOLIN PROGRAM

The Suzuki violin method that originated in Japan was incorporated into Prekindergarten Head Start in 1971. The method is based on the belief that children can learn other skills in the same way they learn to speak their mother tongue. Thus, repetition, imitation, and individuality are encouraged.

The parent plays an important role in the child's musical development in the Suzuki method, for s/he attends the lesson and learns along with the child. At home, the parent becomes the instructor and guides the child through practice sessions. According to Suzuki, it is not so important that children become expert on the violin but rather that they are exposed to a dimension of experience that gives them another form of communication.

The violin project part of the program has opened up a new world and for many of our children would not otherwise have had the opportunity to explore. In addition, it has provided our children and their parents a chance to spend time together while developing the technical skills of violin playing.

For many of our children and parents, it has been a positive step and the starting point for further [illegible]

EDUCATION

A TYPICAL PREKINDERGARTEN HEAD START DAY

8:40 — 8:45 A.M.
PREPARATION FOR DAY'S WORK
8:45 — 9:00
ARRIVAL OF CHILDREN
9:00 — 9:30
BREAKFAST
9:30 — 10:45
FIRST WORK/PLAY PERIOD (CHOICE ACTIVITIES)
10:45 — 11:00
TOILETING
11:00 — 11:20
CIRCLE TIME
11:20 — 11:50
LARGE MUSCLE ACTIVITIES
(OUTDOOR/INDOOR PLAY)
11:50 — 12:00 P.M.
PREPARATION FOR LUNCH
12:00 — 12:30
LUNCH
12:30 — 12:45
DENTAL CARE
12:45 — 1:00
PREPARATION FOR REST
1:00 — 1:45
REST PERIOD
1:45 — 2:15
TOILETING — AFTERNOON SNACK
2:15 — 2:45
SECOND WORK/PLAY PERIOD
2:45 — 3:00
CLEAN-UP AND PREPARATION FOR DISMISSAL

2 HEALTH

Prekindergarten Head Start emphasizes the importance of early identification of health problems. It provides every child with a comprehensive health care program, including medical, dental, mental health, and nutritional services.

A health coordinator, three nurses, and two psychological services specialists comprise the health care staff. The objectives of their activities are:

- to implement a comprehensive health service program of medical, dental, and mental health services to preschool children, including handicapped youngsters;
- to promote preventive health services, including vision, hearing, dental screening programs, immunizations, etc., and appropriate early intervention;
- to link families with an on-going health care system and to help them best utilize it;
- to provide health education to parents, staff, and children;
- to identify the special needs of handicapped children and to develop plans and programs to deal with them;
- to identify and secure help for victims of abuse and neglect, and validate referrals from all other components.

GOOD DENTAL HEALTH
SMILE AMERICA

3 NUTRITION

In the Prekindergarten Head Start program, children are served a cold breakfast, a hot lunch, and snacks each day in order to meet at least two-thirds of their daily nutritional requirements.

A nutritionist coordinates food service and nutrition education for all Prekindergarten Head Start centers. The nutritionist's responsibilities include:

- developing an assessment of the nutritional status of children from health records;
- determining the nutritional needs and interests of families through parent interviews and knowledge of community nutrition problems;
- providing resource materials and methods to Prekindergarten Head Start teaching staff for integrating food-related activities into the curriculum, demonstrating how mealtime can be used to enhance the development and socialization of children;
- helping staff provide opportunities for parent involvement in the nutrition component;
- identifying and involving community resources to train staff, work with handicapped children, further the nutrition education of parents and staff, and meet health and sanitation standards.

A mealtime aide, employed at each center, is responsible for the preparation and service of meals and the cleaning of eating areas.

4 SOCIAL SERVICES

The Social Services Component provides a systematic way of meeting defined human needs through direct assistance. A trained social worker and four community coordinators, who comprise the social service staff, perform the following tasks:

- recruit and enroll eligible children, regardless of their race, sex, creed, color, national origin, or handicap;
- make parents aware of services provided by the Prekindergarten Head Start social services component and by other community resources, and encourage their use;
- assist family members in their own efforts to improve their condition and quality of their lives;
- encourage parent participation in the center and in activities such as the social services committee;
- provide emergency assistance and crisis intervention.

5 PARENT INVOLVEMENT

Parents are the most important influence on a child's development. An essential part of every Prekindergarten Head Start program is the involvement of parents in parent education and program planning and operating activities. Many serve as members of Policy Councils and Committees, and have a voice in administrative and managerial decisions.

The Parent Involvement Component consists of a coordinator and three parent field representatives. Its performance objectives are to:

- provide a program of planned experiences and activities which support and enhance the parental role as the principal influence in children's education and development;
- provide a program that recognizes parents as responsible guardians, the prime educators of their children, and contributors to the Prekindergarten Head Start Program and their communities.

To make parent involvement meaningful, parents are encouraged to serve on policy advisory committees, to become parent scholars, to join the teaching staff on a paid or volunteer basis; every effort is made to enable them to work with their children in cooperation with Prekindergarten Head Start staff members.

Prekindergarten Head Start Policy Groups

Parents with children enrolled in Prekindergarten Head Start are involved in the decisionmaking process concerning the nature and operation of the program. The vehicle for this involvement is the committee structure which follows.

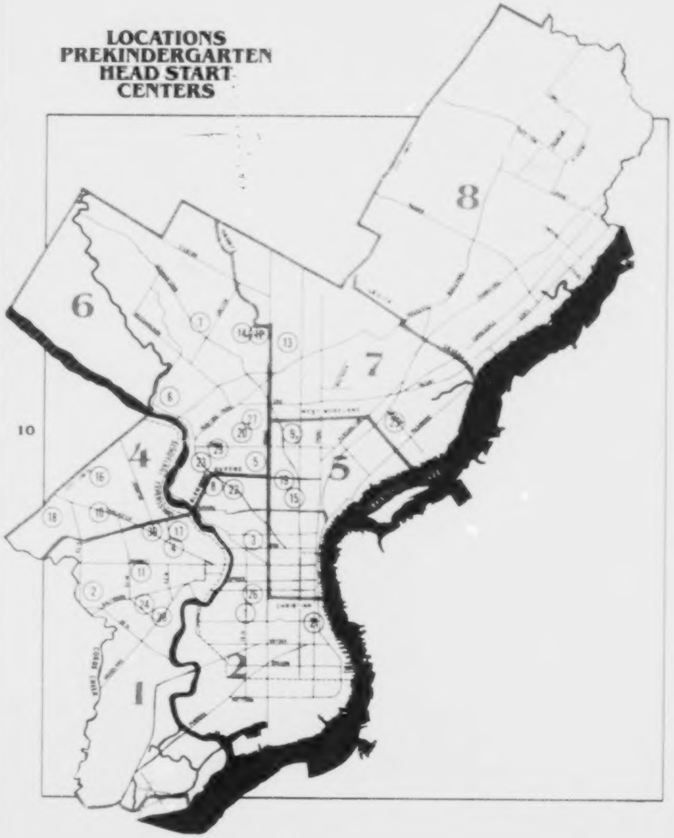
Prekindergarten Head Start Center Committee
Set up at the center level, the committee's membership consists of all parents with a child enrolled at that center. The group elects its own officers and assists the classroom teacher in planning for and implementing daily activities.

Prekindergarten Head Start Policy Committee
This group operates at the delegate agency level and is composed of representatives of all the Center Committees plus at large committee representatives. The Policy Committee is responsible for planning and approving program operations in a variety of areas including curriculum and fiscal matters.

Project Head Start Policy Council
The Council has broad responsibility for planning and overseeing the operation of a wide range of delegate agency functions. It operates at the grantee level.

I Know my address

LOCATIONS PREKINDERGARTEN HEAD START CENTERS



①
Arthur School Head Start Center
20th & Catharine Sts., (19146)
Phone 735-2781 (Dist. 2)

②
Bryant School Head Start Center
60th and Cedar Ave., (19143)
Phone: 474-7466 (Dist. 1)

③
Darrah School Head Start Center
17th & Brown Sts., (19130)
Phone: 978-5587 (Dist. 2)

④
Drew School Head Start Center
38th and Powelton Ave., (19104)
Phone: 387-5412 (Dist. 1)

⑤
Duckrey School Head Start Center
16th & Diamond Sts., (19121)
Phone: 978-4758 (Dist. 4)

⑥
Enon Tabernacle Baptist Church
Head Start Center
230 West Coulter St., (19144)
Phone: 849-8771 (Dist. 6)

⑦
Fulton School Head Start Center
East Haines off Germantown Ave.
(19144)
Phone: 849-8965 (Dist. 6)

⑧
Gideon School Head Start Center
29th & Glenwood Ave., (19121)
Phone: 763-0793 (Dist. 2)

⑨
Hartranft Community
Head Start Center
2415 Germantown Ave., (19133)
Phone: 235-2699 (Dist. 5)

⑩
Heston School Head Start Center
54th & Lancaster Ave., (19151)
Phone: 473-0840 (Dist. 4)

⑪
Huey School Head Start Center
52nd & Pine Sts., (19143)
Phone: 474-6701 (Dist. 1)

⑫
Logan School Head Start Center
17th & Lindley Ave., (19141)
Phone: 474-6701 (Dist. 6)

⑬
Logan / Hoosier Meth. Church
Head Start Center
13th & Rockland Sts., (19141)
Phone: 457-3375 (Dist. 7)

⑭
Logan Portable Head Start Center
17th & Lindley Aves., (19141)
Phone: 455-3092 (Dist. 6)

⑮
Ludlow School Community
Head Start Center
6th & Master Sts., (19121)
Phone: 765-1718 (Dist. 5)

⑯
Mann School Head Start Center
54th & Berks Sts., (19131)
Phone: 473-4347 (Dist. 4)

⑰
McMichael School Head Start
Center
36th & Fairmount Ave., (19104)
Phone: 382-6770 (Dist. 1)

⑱
Most Precious Blood Church
Head Start Center
2814 West Diamond St., (19121)
Phone: 684-2258 (Dist. 4)

⑲
Our Lady of Mercy Church Head
Start Center
Susquehanna and Watts Sts. (19122)
Phone: 684-1364 (Dist. 5)

⑳
T.M. Peirce School Annex Head
Start Center
2850 North 22nd St., (19132)
Phone: 225-3390 (Dist. 4)

㉑
Queen Street Head Start Center
(Settlement Music School)
416 Queen Street (19147)
Phone: 467-0280 (Dist. 2)

㉒
Reynolds School Head Start Center
24th & Jefferson Sts., (19121)
Phone: 763-0819 (Dist. 2)

㉓
Sartain School Head Start Center
31st & Oxford Sts., (19121)
Phone: 684-0225 (Dist. 4)

㉔
St Frances DeSales Church Head
Start
4625 Springfield Ave., (19104)
Phone: 387-4906 (Dist. 1)

㉕
St John United Church Head Start
Frankford & Ontario Sts., (19134)
Phone: 739-9561 (Dist. 7)

㉖
Stanton School Head Start Center
17th & Christian Sts., (19146)
Phone: 546-7297 (Dist. 2)

㉗
Thankful Baptist Church
Head Start Center
17th & Allegheny Ave., (19132)
Phone: 221-9020 (Dist. 4)

㉘
A. Wilson School Head Start Center
46th & Woodland Ave., (19143)
Phone: 382-2885 (Dist. 1)

㉙
Richard R. Wright School Head

28th & Dauphin Sts. (19132)
Phone: 232-0851 (Dist. 4)

㉚
Martha Washington School Head
Start Center
44th & Aspen Sts. (19104) (Dist. 1)

---

6 RESEARCH AND EVALUATION

PREKINDERGARTEN HEAD START RESEARCH FINDINGS

PROGRAM / PERFORMANCE / IMPACT

The following findings for 1979-1980, obtained from the School District's Early Childhood Evaluation Unit are typical of recent performance levels and the impact of the Prekindergarten Head Start Program on Philadelphia children and families.

School Achievement after leaving Prekindergarten Head Start
Six different groups of program graduates had been followed through the elementary grades in Spring 1980. On standardized achievement tests, each group did better than national norm expectations. Furthermore, graduates in Grade Five in 1980, in comparison with all children from School Districts 1-7, those districts in the city in which Head Start centers are located, exceeded the group of all other children in performance below the 16th percentile in Total Reading (21% versus 25%) and in Total Mathematics (17% versus 22%). In other words, a smaller percentage of Prekindergarten Head Start graduates have scores below the 16th percentile than the group of all other children in the same districts. At all other grade levels, except Grade Three in Total Reading, Prekindergarten Head Start (PKHS) graduates performed either above or no more than 3 percentage points below the total comparison group on both performance indicators. These findings are particularly noteworthy when it is recognized that 98% of the PKHS population have incomes well below the federal poverty standards and receive Public Assistance, while the national norm group and the local comparison group represent much wider range of socioeconomic levels. Research in this area states that children of groups which contain large numbers of people with low incomes, such as PKHS, are expected to be at least one grade level below national norm expectations. This performance level is clearly more than exceeded by PKHS graduates. It should be noted that in comparison with a Title I eligible group — a group comparable to PKHS in SES characteristics — PKHS consistently exceeds the Title I group by as many as 20 percentage points in percentages of children at or above national norms in Third and Fourth Grade Total Reading and Total Mathematics.

PREKINDERGARTEN
HEAD START

Parent Involvement
A total of 22,905 hours were contributed by PKHS parents in 1979-1980 in volunteering for various activities such as classroom participation or attendance at workshops. The hours contributed represent approximately 18 hours per child enrolled.

Supportive Services
During this past year 98% of the children received physical examinations and received screenings for vision, hearing, growth, and dental problems. All problems (100%) in all areas discovered through screenings had either been treated or were under treatment by the end of the year.

Additional Research Data
More specific data relating to the impact of Prekindergarten Head Start is available through the:

Office of Research and Evaluation
Early Childhood Evaluation Unit
Room 400 Administration Building
21st and the Parkway, Philadelphia, Pa. 19103

(215) 299-7763

THE SCHOOL DISTRICT OF PHILADELPHIA

DR. MICHAEL P. MARCASE
Superintendent of Schools
MR. CHARLES A. HIGHSMITH
Deputy Superintendent of Schools

DR. CONSTANCE B. CLAYTON
Associate Superintendent
Early Childhood Education
(215) 299-7859

MRS. ELAINE S. SPAIN
Director, Prekindergarten
Head Start Program
(215) 299-7712

MR. THOMAS C. ROSICA
Executive Director
Federal Programs

MEMBERS OF THE BOARD OF EDUCATION

MR. ARTHUR W. THOMAS
President
MRS. EDWARD OBERHOLTZER
Vice President
MR. AUGUSTUS BAXTER
MRS. LAWRENCE BOONIN
MR. JOSEPH H. PREVITY
MR. SAMUEL H. RUBIN
MRS. MICHAEL STACK
GEORGE PHILIP STAHL, JR., ESQ.
DR. NICHOLAS B. TROLIO

In 1969, Head Start was delegated from the Office of Economic Opportunity to the Office of Child Development in the U.S. Department of Health, Education, and Welfare, and has now become a program within the Administration for Children, Youth and Families at HEW. Project Head Start is still an innovative, experimental demonstration program that has had a strong impact on communities and early childhood programs across the country. Since 1965, Head Start has served almost 7 million children and their families.

PAAC

This program is sponsored by the Philadelphia Allied Action Commission

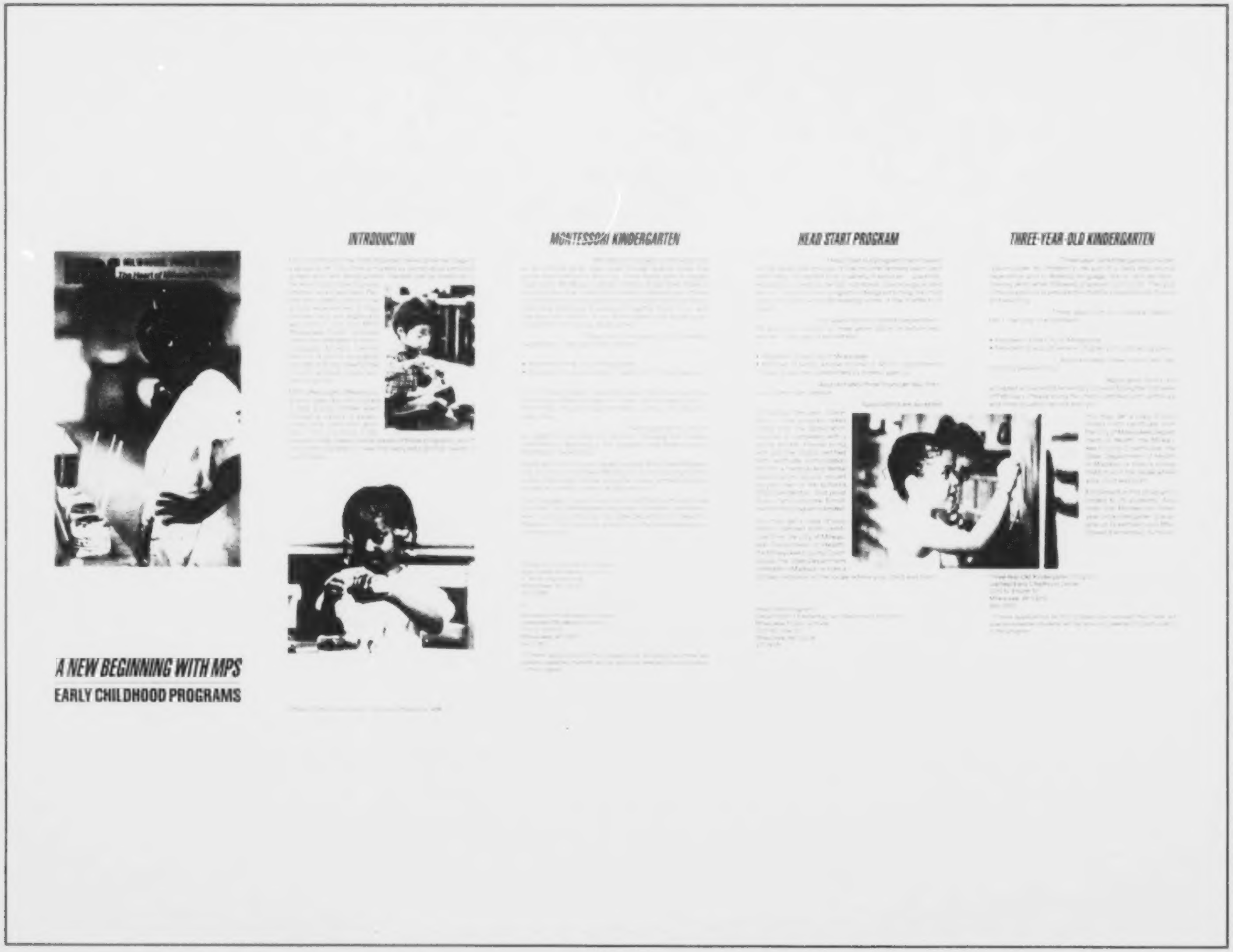
PHOTOGRAPHS AND DESIGN: SYLVIA A. BARKAN GRAPHIC DESIGN STUDIO

300

THE SCHOOL DISTRICT OF PHILADELPHIA

EARLY CHILDHOOD EDUCATION

301



INTRODUCTION

MONTESSORI KINDERGARTEN

HEAD START PROGRAM

THREE-YEAR-OLD KINDERGARTEN

A NEW BEGINNING WITH MPS

EARLY CHILDHOOD PROGRAMS

BILINGUAL KINDERGARTEN (SPANISH-ENGLISH)

The bilingual kindergarten program provides students with a specially planned program of instruction that helps children become proficient speakers of English while they also maintain and develop Spanish-speaking skills.

Four or five years old on or before September 1 the year of enrollment.

- Resident of the City of Milwaukee
- Child of a family with Spanish background and limited English language skills

Approximately three hours per day morning or afternoon session.

For four-year-olds: applications are accepted during the first week of February.
For five-year-olds: applications are accepted during the first full week of March.
For children applying to either program: applications are accepted throughout the year, according to the availability of spaces in the bilingual schools.

Placement in the program occurs after a test for English language proficiency has been conducted by the MPS Office of [illegible]. This office was established in [illegible] to help MPS better meet the educational needs of children of limited English proficiency. Please bring the child's certified birth certificate and immunization record with you.

You may get a copy of your child's certified birth certificate from the City of Milwaukee Department of Health, the Milwaukee County Courthouse, the State Department of Health in Madison or from a similar institution in the locale where your child was born.

Bilingual Kindergarten Program
Department of Elementary and Secondary Education
Milwaukee Public Schools
5225 W. Vliet St.
Milwaukee, WI 53208
[illegible]

EXCEPTIONAL EDUCATION PROGRAM

This is a program for children with exceptional education needs that offers a variety of placement options. Children may be placed in the following programs: deaf and hard of hearing, emotionally disturbed, mentally retarded, learning disabled, visually handicapped, physically handicapped or speech and language disabled.

After the child's third birthday, parents may request that their child be evaluated to be placed in this program.

- Resident of the City of Milwaukee
- Suburban children who may apply through the Chapter 220 Program
- Child who has been identified as handicapped by an MPS evaluation team. This team generally consists of a teacher, psychologist, school social worker, speech/language pathologist, and others, according to the child's needs.

Varies according to each child's needs.

Requests for the child's exceptional education evaluation are accepted at all MPS neighborhood schools throughout the year or by calling Child Find.

After your child has received an evaluation and has been authorized for placement in an exceptional education program, you will need a copy of the child's certified birth certificate and immunization record.

You may get a copy of your child's certified birth certificate from the City of Milwaukee Department of Health, the Milwaukee County Courthouse, the State Department of Health in Madison or from a similar institution in the locale where your child was born.

Exceptional Education Program
[illegible]
[illegible]
[illegible]
[illegible]
Milwaukee, WI [illegible]
[illegible]

Child Find
Milwaukee Public Schools
[illegible]
Milwaukee, WI [illegible]
[illegible]

CHAPTER 1 EARLY CHILDHOOD PROGRAM

This program provides opportunities for children to focus on improving general school readiness skills in reading, language arts, and math during pre-kindergarten.

Four years old on or before September 1 the year of enrollment.

- Resident of the City of Milwaukee in Chapter 1 areas
- Child who has demonstrated [illegible] by [illegible] administered by the school

Approximately three hours per day morning or afternoon session.

Applications are accepted throughout the year at all MPS Chapter 1 pre-school locations. Please bring the child's certified birth certificate and immunization record with you.

You may get a copy of your child's certified birth certificate from the City of Milwaukee Department of Health, the Milwaukee County Courthouse, the State Department of Health in Madison or from a similar institution in the locale where your child was born.

Chapter 1 Early Childhood Program
Department of Elementary and Secondary Education
Milwaukee Public Schools
5225 W. Vliet St.
Milwaukee, WI [illegible]
[illegible]

FOUR-YEAR-OLD KINDERGARTEN

Four year old kindergarten provides children with an opportunity to participate in a daily [illegible] educational program designed to strengthen [illegible] skills.

Four years old on or before September 1 the year of enrollment.

- Resident of the City of Milwaukee
- Resident of suburb where Chapter 220 contract applies

Approximately three hours per day morning or afternoon session.

Application forms are accepted at all MPS schools during the first week of February. Please bring the child's certified birth certificate and immunization record with you.*

You may get a copy of your child's certified birth certificate from the City of Milwaukee Department of Health, the Milwaukee County Courthouse, the State Department of Health in Madison or from a similar institution in the locale where your child was born.

Four-Year-Old Kindergarten Program
Department of Elementary and Secondary Education
Milwaukee Public Schools
5225 W. Vliet St.
Milwaukee, WI 53208
[illegible]

*If more applications for this program are received than there are spaces available, students will be randomly selected for participation in the program.

FIVE-YEAR-OLD KINDERGARTEN

Five year old kindergarten offers children an important chance to work, play and learn with other students of the same age. The purpose of this program is to promote the social, emotional, educational and physical development of each student. In five year old kindergarten students learn about math, reading, language arts, social studies, science, health, music, art and physical education. Children also learn how to solve problems and to work independently.

Five years old on or before September 1 the year of enrollment.

- Resident of the City of Milwaukee
- Resident of a suburb where Chapter 220 contract applies

For half-day program: Approximately three hours per day morning or afternoon session.
For full-day program: Approximately six hours per day.

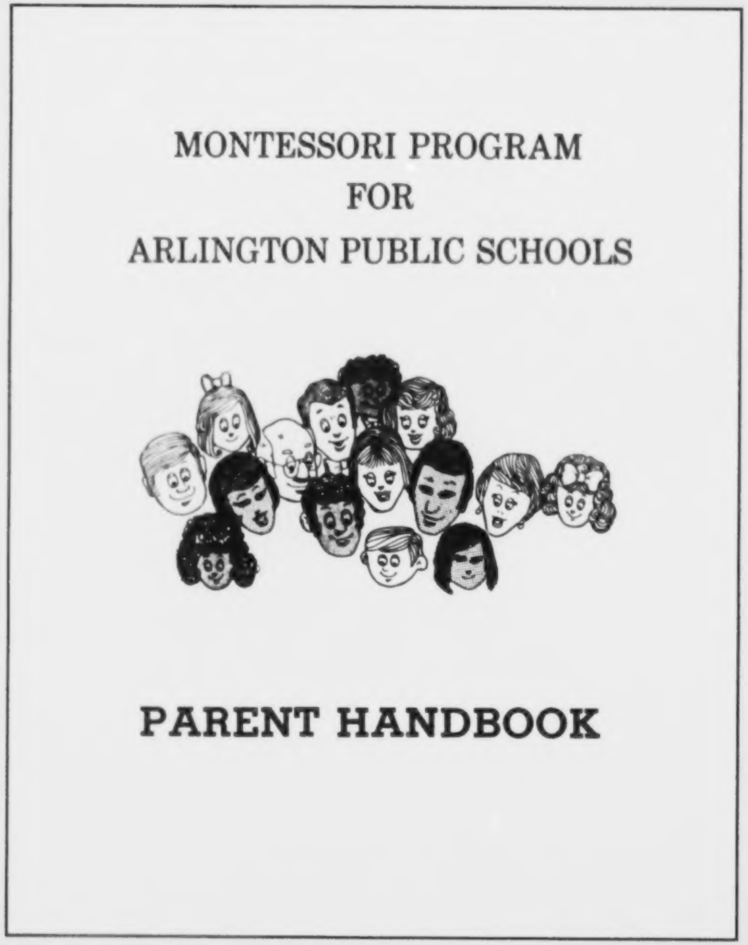
For half-day program: Application/registration forms are accepted at all MPS elementary schools beginning the first week of March. Please bring the child's certified birth certificate and immunization record with you.
For full-day programs and citywide specialty schools: Application forms are accepted at all MPS elementary schools during the first week of February. Please bring the child's certified birth certificate and immunization record with you.

You may get a copy of your child's certified birth certificate from the City of Milwaukee Department of Health, the Milwaukee County Courthouse, the State Department of Health in Madison or from a similar institution in the locale where your child was born.

Five-Year-Old Kindergarten Program
Department of Elementary and Secondary Education
Milwaukee Public Schools
5225 W. Vliet St.
Milwaukee, WI 53208
[illegible]

Appendix 9: Parent Handbook — Arlington Public Schools, Arlington, Virginia

A compact presentation of a Montessori preschool within the public school district. Although 99 percent of their five year olds do continue, this brochure does not stress enough the continuation in the third year of Montessori.



MONTESSORI PROGRAM
FOR
ARLINGTON PUBLIC SCHOOLS

PARENT HANDBOOK

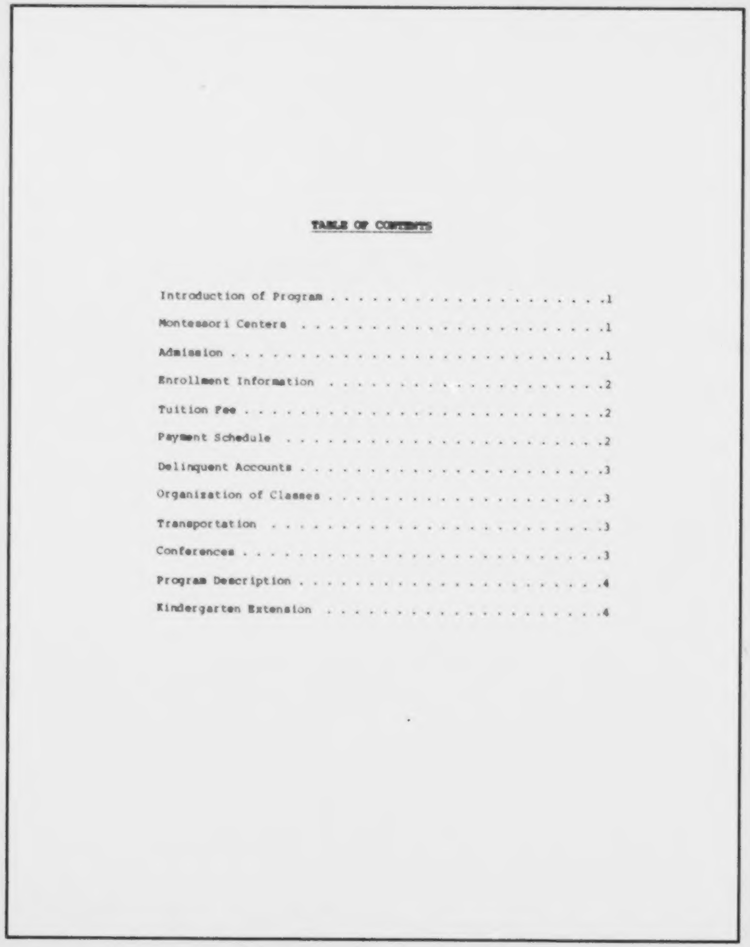
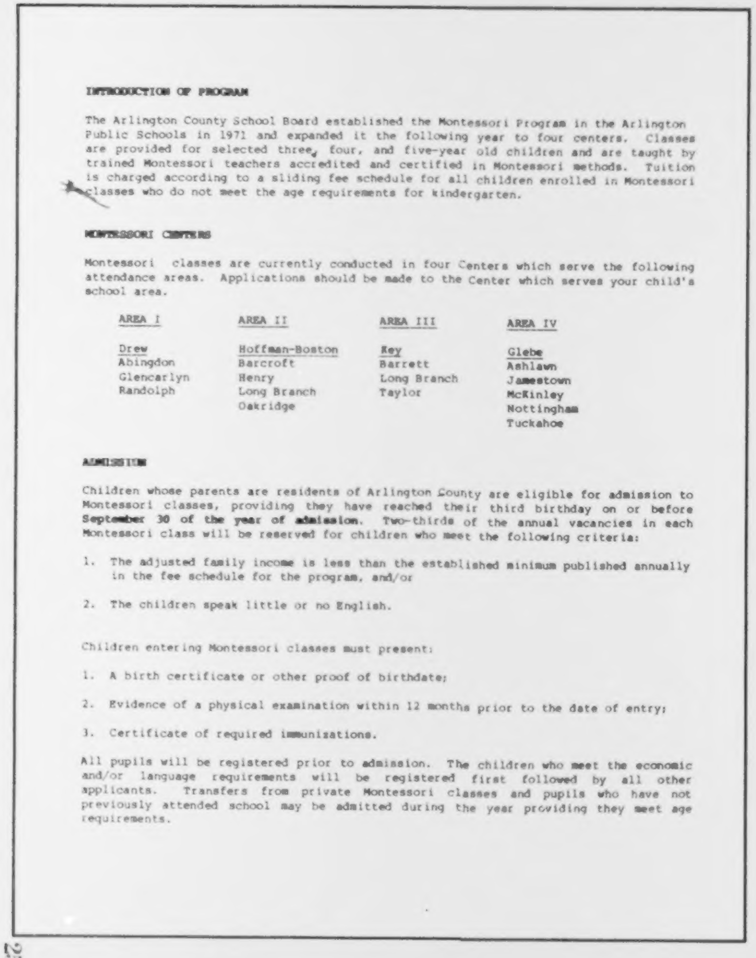


TABLE OF CONTENTS

Introduction of Program 1
Montessori Centers 1
Admission 1
Enrollment Information .2
Tuition Fee 2
Payment Schedule 2
Delinquent Accounts 3
Organization of Classes 3
Transportation 3
Conferences 3
Program Description 4
Kindergarten Extension 4



INTRODUCTION OF PROGRAM

The Arlington County School Board established the Montessori Program in the Arlington Public Schools in 1971 and expanded it the following year to four centers. Classes are provided for selected three, four, and five-year old children and are taught by trained Montessori teachers accredited and certified in Montessori methods. Tuition is charged according to a sliding fee schedule for all children enrolled in Montessori classes who do not meet the age requirements for kindergarten.

MONTESSORI CENTERS

Montessori classes are currently conducted in four Centers which serve the following attendance areas. Applications should be made to the Center which serves your child's school area.

AREA I	AREA II	AREA III	AREA IV
Drew	Hoffman-Boston	Key	Glebe
Abingdon	Barcroft	Barrett	Ashlawn
Glencarlyn	Henry	Long Branch	Jamestown
Randolph	Long Branch	Taylor	McKinley
	Oakridge		Nottingham
			Tuckahoe

ADMISSION

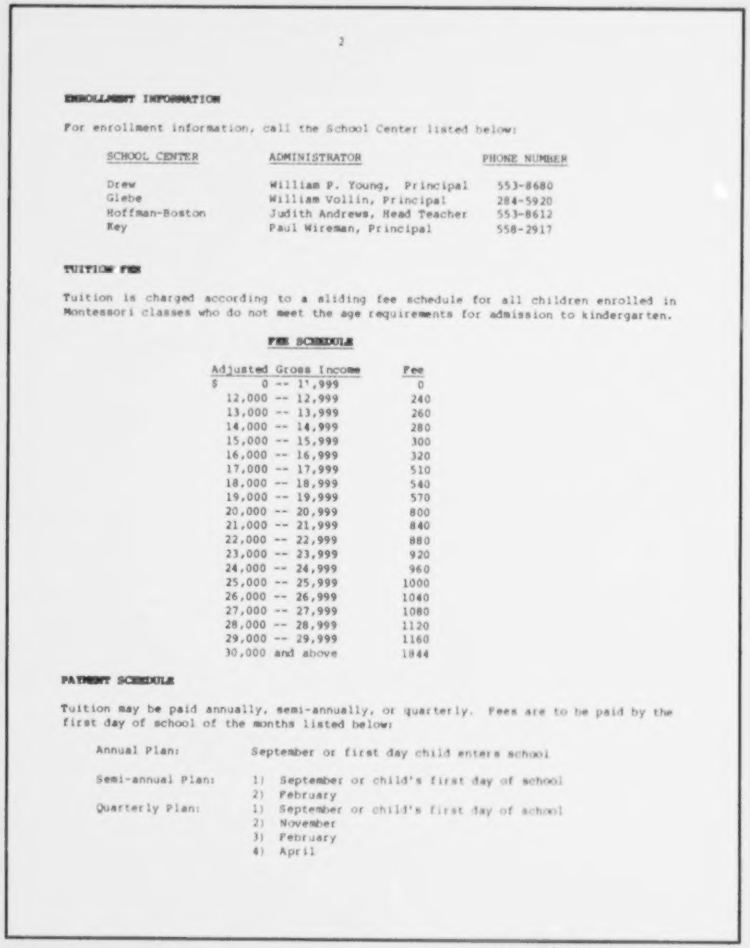
Children whose parents are residents of Arlington County are eligible for admission to Montessori classes, providing they have reached their third birthday on or before **September 30 of the year of admission**. Two-thirds of the annual vacancies in each Montessori class will be reserved for children who meet the following criteria:

1. The adjusted family income is less than the established minimum published annually in the fee schedule for the program, and/or
2. The children speak little or no English.

Children entering Montessori classes must present:

1. A birth certificate or other proof of birthdate;
2. Evidence of a physical examination within 12 months prior to the date of entry;
3. Certificate of required immunizations.

All pupils will be registered prior to admission. The children who meet the economic and/or language requirements will be registered first followed by all other applicants. Transfers from private Montessori classes and pupils who have not previously attended school may be admitted during the year providing they meet age requirements.



ENROLLMENT INFORMATION

For enrollment information, call the School Center listed below:

SCHOOL CENTER	ADMINISTRATOR	PHONE NUMBER
Drew	William P. Young, Principal	553-8680
Glebe	William Vollin, Principal	284-5920
Hoffman-Boston	Judith Andrews, Head Teacher	553-8612
Key	Paul Wireman, Principal	558-2917

TUITION FEE

Tuition is charged according to a sliding fee schedule for all children enrolled in Montessori classes who do not meet the age requirements for admission to kindergarten.

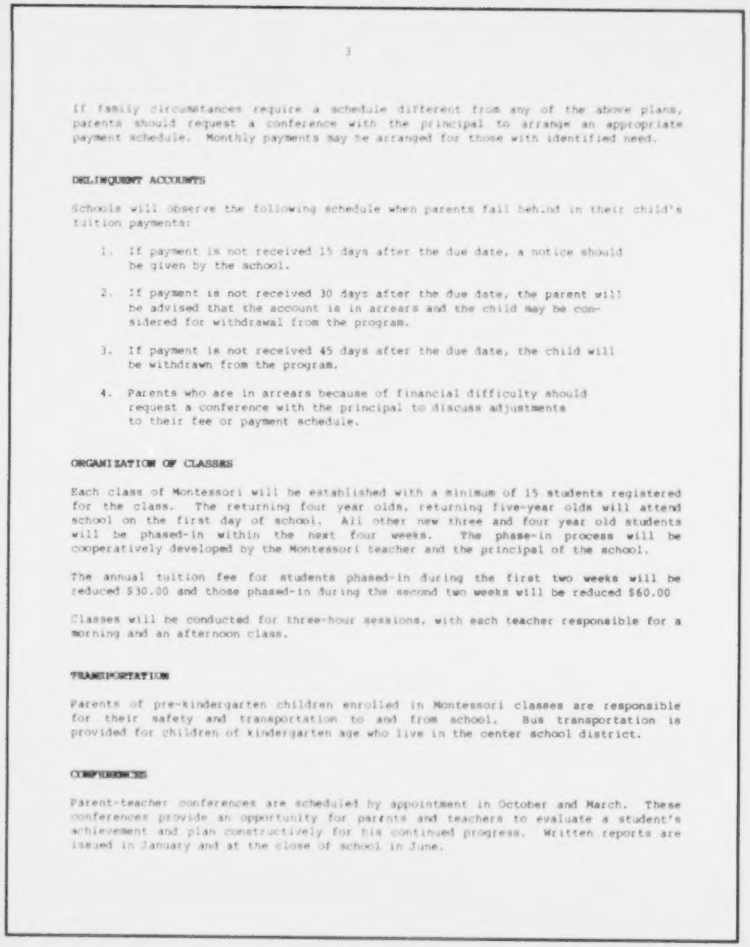
FEE SCHEDULE

Adjusted Gross Income	Fee
$ 0 -- 1',999	0
12,000 -- 12,999	240
13,000 -- 13,999	260
14,000 -- 14,999	280
15,000 -- 15,999	300
16,000 -- 16,999	320
17,000 -- 17,999	510
18,000 -- 18,999	540
19,000 -- 19,999	570
20,000 -- 20,999	800
21,000 -- 21,999	840
22,000 -- 22,999	880
23,000 -- 23,999	920
24,000 -- 24,999	960
25,000 -- 25,999	1000
26,000 -- 26,999	1040
27,000 -- 27,999	1080
28,000 -- 28,999	1120
29,000 -- 29,999	1160
30,000 and above	1844

PAYMENT SCHEDULE

Tuition may be paid annually, semi-annually, or quarterly. Fees are to be paid by the first day of school of the months listed below:

Annual Plan:	September or first day child enters school
Semi-annual Plan:	1) September or child's first day of school 2) February
Quarterly Plan:	1) September or child's first day of school 2) November 3) February 4) April



If family circumstances require a schedule different from any of the above plans, parents should request a conference with the principal to arrange an appropriate payment schedule. Monthly payments may be arranged for those with identified need.

DELINQUENT ACCOUNTS

Schools will observe the following schedule when parents fall behind in their child's tuition payments:

1. If payment is not received 15 days after the due date, a notice should be given by the school.
2. If payment is not received 30 days after the due date, the parent will be advised that the account is in arrears and the child may be considered for withdrawal from the program.
3. If payment is not received 45 days after the due date, the child will be withdrawn from the program.
4. Parents who are in arrears because of financial difficulty should request a conference with the principal to discuss adjustments to their fee or payment schedule.

ORGANIZATION OF CLASSES

Each class of Montessori will be established with a minimum of 15 students registered for the class. The returning four year olds, returning five-year olds will attend school on the first day of school. All other new three and four year old students will be phased-in within the next four weeks. The phase-in process will be cooperatively developed by the Montessori teacher and the principal of the school.

The annual tuition fee for students phased-in during the first two weeks will be reduced $30.00 and those phased-in during the second two weeks will be reduced $60.00

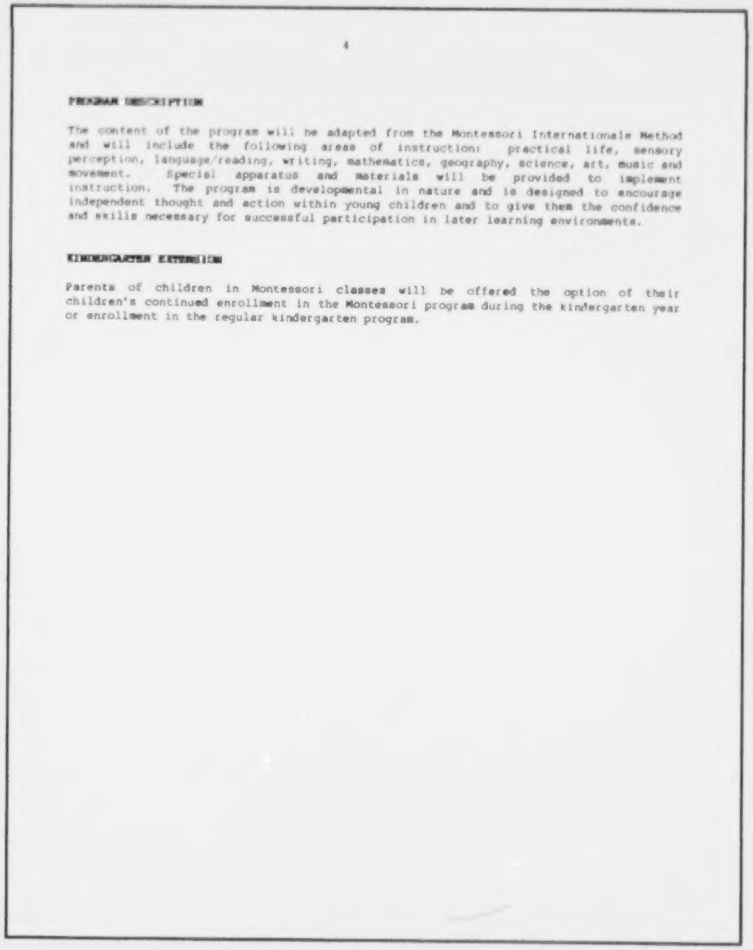
Classes will be conducted for three-hour sessions, with each teacher responsible for a morning and an afternoon class.

TRANSPORTATION

Parents of pre-kindergarten children enrolled in Montessori classes are responsible for their safety and transportation to and from school. Bus transportation is provided for children of kindergarten age who live in the center school district.

CONFERENCES

Parent-teacher conferences are scheduled by appointment in October and March. These conferences provide an opportunity for parents and teachers to evaluate a student's achievement and plan constructively for his continued progress. Written reports are issued in January and at the close of school in June.



PROGRAM DESCRIPTION

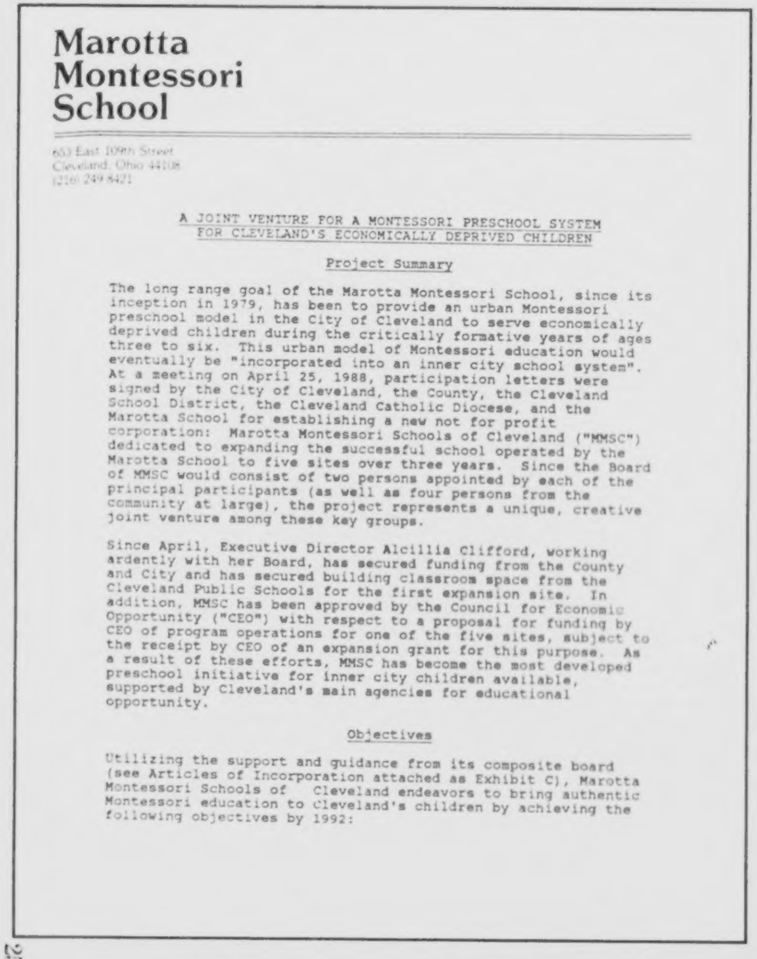
The content of the program will be adapted from the Montessori Internationale Method and will include the following areas of instruction: practical life, sensory perception, language/reading, writing, mathematics, geography, science, art, music and movement. Special apparatus and materials will be provided to implement instruction. The program is developmental in nature and is designed to encourage independent thought and action within young children and to give them the confidence and skills necessary for successful participation in later learning environments.

KINDERGARTEN EXTENSION

Parents of children in Montessori classes will be offered the option of their children's continued enrollment in the Montessori program during the kindergarten year or enrollment in the regular kindergarten program.

Appendix 10: Joint Venture Proposal — Marotta Montessori Schools, Cleveland, Ohio

This excerpt shows the concept base for a joint venture. (The full proposal may be ordered from the Montessori Public School Consortium, 2859 Scarborough Rd., Cleveland Hts., OH 44118.)



Marotta Montessori School

653 East 109th Street
Cleveland, Ohio 44108
(216) 249-8421

A JOINT VENTURE FOR A MONTESSORI PRESCHOOL SYSTEM FOR CLEVELAND'S ECONOMICALLY DEPRIVED CHILDREN

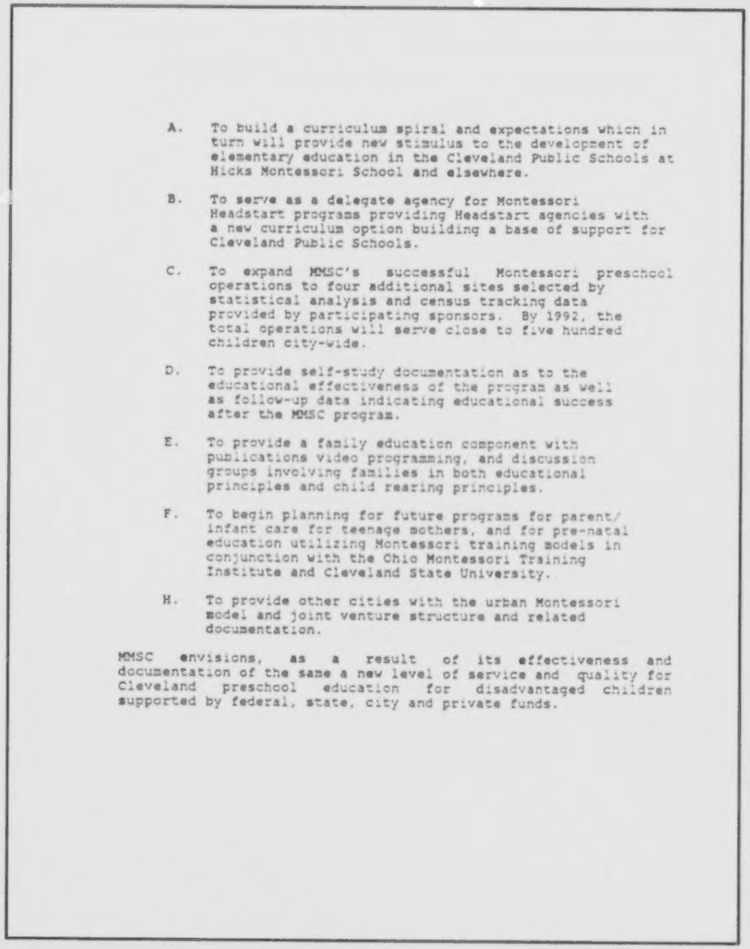
Project Summary

The long range goal of the Marotta Montessori School, since its inception in 1979, has been to provide an urban Montessori preschool model in the City of Cleveland to serve economically deprived children during the critically formative years of ages three to six. This urban model of Montessori education would eventually be "incorporated into an inner city school system". At a meeting on April 25, 1988, participation letters were signed by the City of Cleveland, the County, the Cleveland School District, the Cleveland Catholic Diocese, and the Marotta School for establishing a new not for profit corporation: Marotta Montessori Schools of Cleveland ("MMSC") dedicated to expanding the successful school operated by the Marotta School to five sites over three years. Since the Board of MMSC would consist of two persons appointed by each of the principal participants (as well as four persons from the community at large), the project represents a unique, creative joint venture among these key groups.

Since April, Executive Director Alcillia Clifford, working ardently with her Board, has secured funding from the County and City and has secured building classroom space from the Cleveland Public Schools for the first expansion site. In addition, MMSC has been approved by the Council for Economic Opportunity ("CEO") with respect to a proposal for funding by CEO of program operations for one of the five sites, subject to the receipt by CEO of an expansion grant for this purpose. As a result of these efforts, MMSC has become the most developed preschool initiative for inner city children available, supported by Cleveland's main agencies for educational opportunity.

Objectives

Utilizing the support and guidance from its composite board (see Articles of Incorporation attached as Exhibit C), Marotta Montessori Schools of Cleveland endeavors to bring authentic Montessori education to Cleveland's children by achieving the following objectives by 1992:



A. To build a curriculum spiral and expectations which in turn will provide new stimulus to the development of elementary education in the Cleveland Public Schools at Hicks Montessori School and elsewhere.

B. To serve as a delegate agency for Montessori Headstart programs providing Headstart agencies with a new curriculum option building a base of support for Cleveland Public Schools.

C. To expand MMSC's successful Montessori preschool operations to four additional sites selected by statistical analysis and census tracking data provided by participating sponsors. By 1992, the total operations will serve close to five hundred children city-wide.

D. To provide self-study documentation as to the educational effectiveness of the program as well as follow-up data indicating educational success after the MMSC program.

E. To provide a family education component with publications video programming, and discussion groups involving families in both educational principles and child rearing principles.

F. To begin planning for future programs for parent/infant care for teenage mothers, and for pre-natal education utilizing Montessori training models in conjunction with the Ohio Montessori Training Institute and Cleveland State University.

H. To provide other cities with the urban Montessori model and joint venture structure and related documentation.

MMSC envisions, as a result of its effectiveness and documentation of the same a new level of service and quality for Cleveland preschool education for disadvantaged children supported by federal, state, city and private funds.

Appendix 11: Headstart Expansion Proposal Written for Incorporating Montessori into Headstart — Marotta Montessori Schools (excerpt)

Utilized by the Marotta "Joint Venture" program in Cleveland, this proposal allows for Headstart sponsorship of a Montessori Concept. (The full proposal may be ordered from the Montessori Public School Consortium, 2859 Scarborough Rd., Cleveland Hts., OH 44118.)

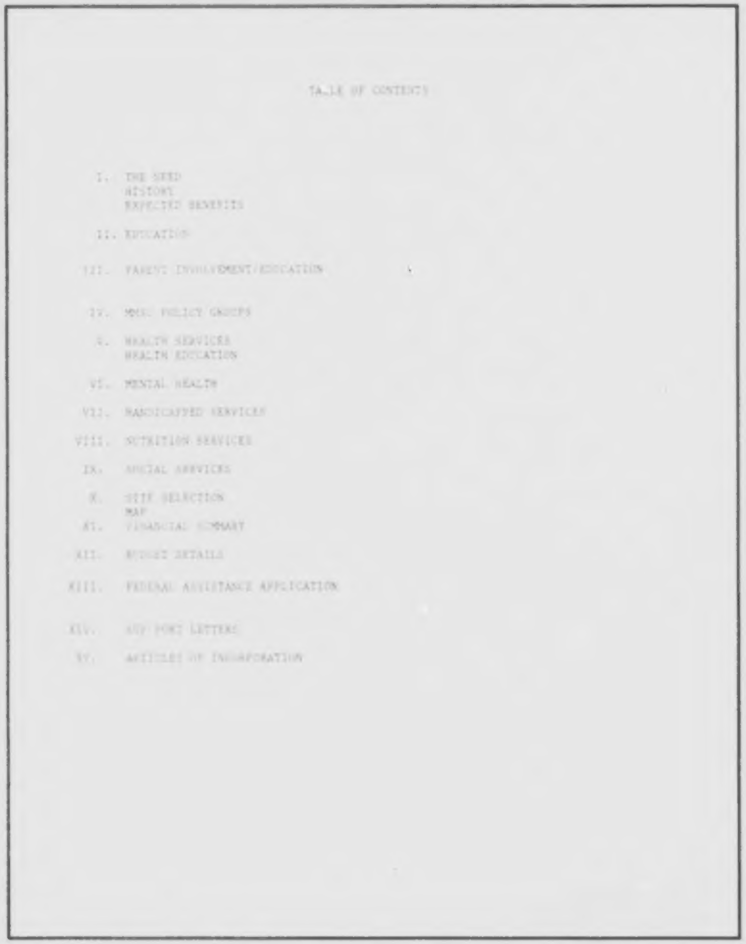


TABLE OF CONTENTS

I. THE NEED
HISTORY
EXPECTED BENEFITS

II. EDUCATION

III. PARENT INVOLVEMENT/EDUCATION

IV. MMSC POLICY GROUPS

V. HEALTH SERVICES
HEALTH EDUCATION

VI. MENTAL HEALTH

VII. HANDICAPPED SERVICES

VIII. NUTRITION SERVICES

IX. SOCIAL SERVICES

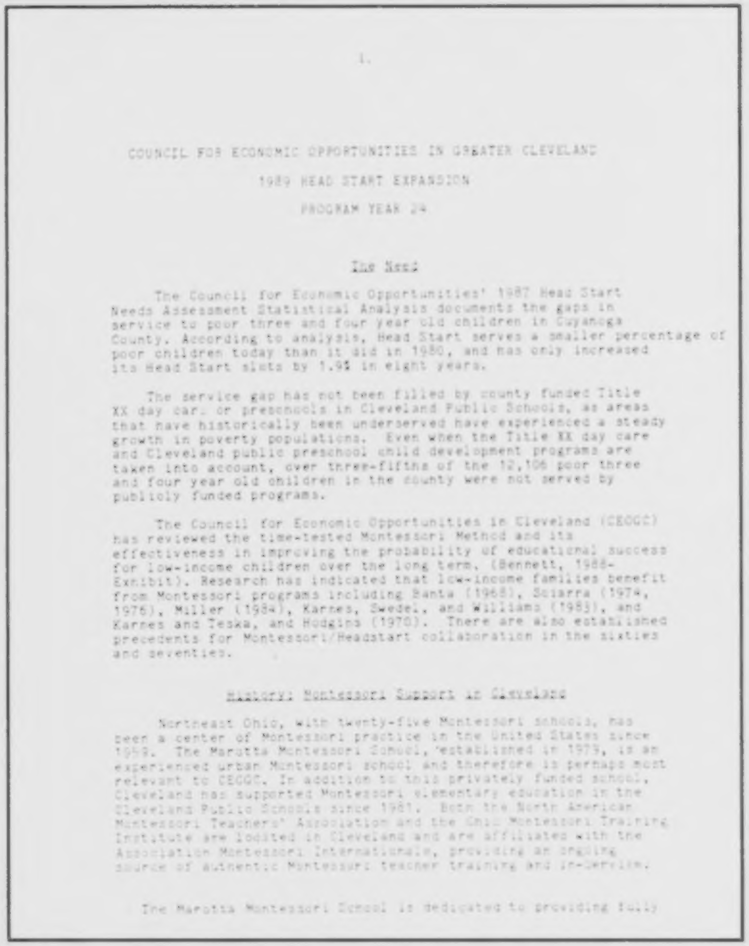
X. SITE SELECTION
MAP
XI. FINANCIAL SUMMARY

XII. BUDGET DETAILS

XIII. FEDERAL ASSISTANCE APPLICATION

XIV. SUPPORT LETTERS

XV. ARTICLES OF INCORPORATION



1.

COUNCIL FOR ECONOMIC OPPORTUNITIES IN GREATER CLEVELAND

1989 HEAD START EXPANSION

PROGRAM YEAR 24

The Need

The Council for Economic Opportunities' 1987 Head Start Needs Assessment Statistical Analysis documents the gaps in service to poor three and four year old children in Cuyahoga County. According to analysis, Head Start serves a smaller percentage of poor children today than it did in 1980, and has only increased its Head Start slots by 1.9% in eight years.

The service gap has not been filled by county funded Title XX day care or preschools in Cleveland Public Schools, as areas that have historically been underserved have experienced a steady growth in poverty populations. Even when the Title XX day care and Cleveland public preschool child development programs are taken into account, over three-fifths of the 12,106 poor three and four year old children in the county were not served by publicly funded programs.

The Council for Economic Opportunities in Cleveland (CEOGC) has reviewed the time-tested Montessori Method and its effectiveness in improving the probability of educational success for low-income children over the long term. (Bennett, 1988-Exhibit). Research has indicated that low-income families benefit from Montessori programs including Banta (1968), Sciarra (1974, 1976), Miller (1984), Karnes, Swedel, and Williams (1983), and Karnes and Teska, and Hodgins (1970). There are also established precedents for Montessori/Headstart collaboration in the sixties and seventies.

History: Montessori Support in Cleveland

Northeast Ohio, with twenty-five Montessori schools, has been a center of Montessori practice in the United States since 1959. The Marotta Montessori School, established in 1979, is an experienced urban Montessori school and therefore is perhaps most relevant to CEOGC. In addition to this privately funded school, Cleveland has supported Montessori elementary education in the Cleveland Public Schools since 1981. Both the North American Montessori Teachers' Association and the Ohio Montessori Training Institute are located in Cleveland and are affiliated with the Association Montessori Internationale, providing an ongoing source of authentic Montessori teacher training and in-service.

The Marotta Montessori School is dedicated to providing fully developed Montessori education to low-income, primarily black, families. The Marotta program was first conceived by Robert Wolf of the FAMICOS foundation who, in his work with Sister Henrietta, C.S.A., endeavored to meet the housing, nutritional and educational needs of poor families. Mr. and Mrs. Vincent Marotta provided the funding for this unique pilot program supporting both excellent Montessori teaching while maintaining nutritional and health services simultaneously. The Marotta Montessori School, at the heart of its operations, embodied a developmental program equipped to service needy neighborhoods with implicit headstart objectives.

Under the direction of its principal, Alcillia Clifford, Marotta Montessori School has proposed a Montessori expansion program designed to service economically deprived children in conjunction with the Cleveland Public Schools. In April 1988, the officials of the City of Cleveland, Cuyahoga County, Cleveland Public Schools and the Cleveland Catholic Diocese established a new non-profit corporation: The Marotta Montessori Schools of Cleveland (MMSC). MMSC, as it looked to its expanded mission, approached the Council for Economic Opportunity of Greater Cleveland (CEOGC) for funding and expanded services.

After several meetings with Mrs. Clifford and after reviewing her staff's detailed study reconciling Montessori and Head Start performance standards, MMSC and CEOGC elected to seek expansion funds. MMSC has cooperated with CEOGC for the establishment of a pilot program serving 80 children which will provide an opportunity to build an integration of Montessori and Head Start procedures. MMSC projections call for four operating sites of four classes each by 1991 including the MMSC/CEOGC proposed expansion of two sites.

Expected Benefits

Research includes a 1988 Cleveland State University follow-up study of Marotta students. That study and others indicate that the Montessori preschool experiences are beneficial to children living in low socio-economic environments, with especially significant findings documenting higher performance at the advanced elementary and high school levels. MMSC programming provides not only Montessori high standards, but also an emphasis on socialization, social competencies, self-image enhancement, academic and communication skills, parent education and human relations. CEOGC has reviewed the MMSC program plan and heartily endorses the design as an effective delivery system for all Head Start components.

This unique expansion, under the direction of MMSC, should foster the following benefits which are far-reaching.

--Outstanding programming for both Head Start and Cleveland Public Schools provided by MMSC with support from the Ohio Montessori Institute and Cleveland State University.

--Successful expansion of child development and educational services to areas of unmet need documented by the census data of CEOGC.

--An extensive family education program including parent discussions with video and publication support.

--Academic success which stimulates higher expectations for elementary education in Cleveland Public Schools.

--Research and documentation approaches built into program design.

--Special planning functions for new programming for parent-infant care for teenage mothers utilizing Montessori models.

--Planning and research for state funding of preschool education.

II.

Education: The Montessori Classroom

The Marotta Montessori Schools of Cleveland will operate their Head Start classrooms in accordance with the high standards established by the Association Montessori Internationale. The child education component will include the following:

1.) A "prepared environment" with child-sized furniture and fixtures which encourage children to be self-reliant and independent.

2.) Coordination of the classroom setting for three-to-five year-old children (until mandatory school enrollment), to allow children of different ages to work at their personal level and pace according to their natural tendencies.

3.) A full range of Montessori three-dimensional didactic materials for children aged three to five years, including practical life activities that cultivate the ability to care for one's self and one's environment; sensorial materials that sharpen the child's senses in preparation for observation of the physical world and academic and cultural activities which expose the child to the basics in reading, writing, mathematics, geography, history, life science, art, music and dramatics.

4.) Montessori-trained adults who guide children with a minimum of intervention. Teachers must have a bachelor's degree and be certified by the Association Montessori Internationale.

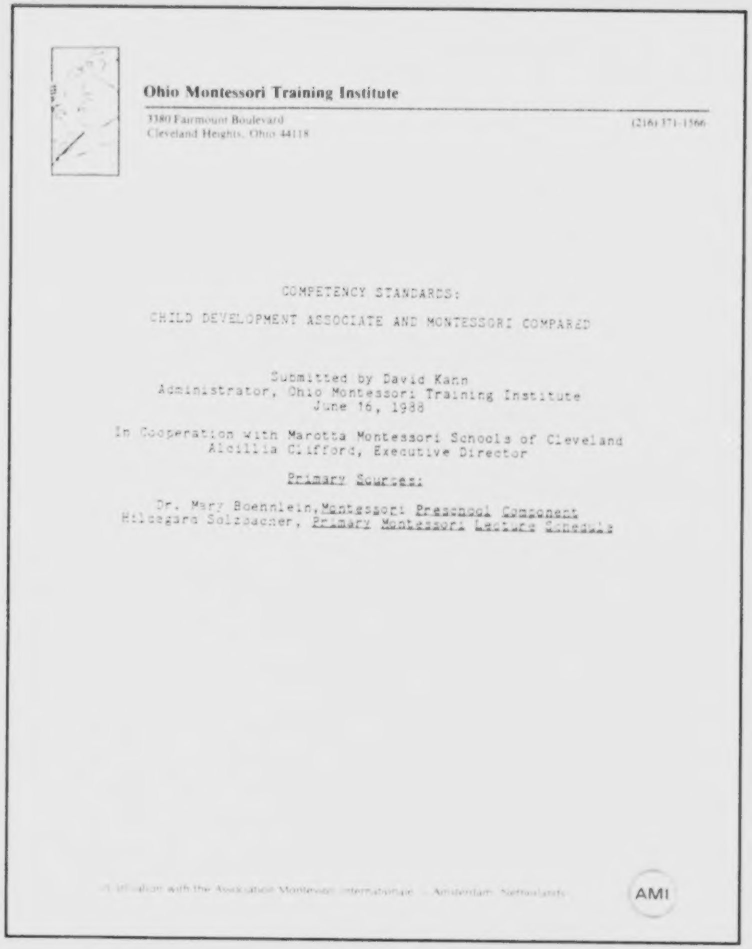
5.) Cultivation of "normalized classes" where children are able to concentrate for long periods of uninterrupted time and make choices of activity, thus building independent thinking skills.

The Montessori program is developmental in approach, focusing on a curriculum framework that encourages child-initiated activity. Children in the classroom choose their activity, and each activity and each exercise available to them is designed for purposeful learning by doing. The teacher's intervention with the child is guided by observation, and lessons are individualized and characterized by simplicity and objectivity. The concept is that of a "children's house," offering Montessori academics, with health and nutrition as an integral part of the education program.

The MMSC will operate its classrooms five (5) days a week for 38 weeks each year. The program will include three and four year olds, as well as five year olds, who are not eligible for entry into kindergarten (five year olds must turn five after September 30). All children will participate in classroom activity from 9:00 a.m. to 12:30 p.m. Children from four and a half to five will stay for afternoon sessions from 1 p.m. until 3 p.m. The variation in center attendance supports the Montessori technique of encouraging older children to teach younger ones, while preparing them for transition to the public school kindergarten. The older children who attend "extended day" sessions will receive more individual lessons reinforcing their math and language skills. The classrooms vacated by children in the afternoon will be used for structured training for parents of the children in the program, including group discussions which give parents the opportunity to interact and learn from each other. Babysitting services are provided during parent education sessions by the school staff.

Appendix 12: C.D.A. Equivalences for Montessori Teacher Training (Headstart) — Cleveland, Ohio

A demonstration of Headstart (C.D.A.) and Montessori training compatability is afforded by excerpts from this extensive document. Submitted by David Kahn and Alcillia Clifford.



Ohio Montessori Training Institute

3380 Fairmount Boulevard
Cleveland Heights, Ohio 44118
(216) 371-1566

COMPETENCY STANDARDS:

CHILD DEVELOPMENT ASSOCIATE AND MONTESSORI COMPARED

Submitted by David Kahn
Administrator, Ohio Montessori Training Institute
June 16, 1988

In Cooperation with Marotta Montessori Schools of Cleveland
Alcillia Clifford, Executive Director

Primary Sources:

Dr. Mary Boehnlein, Montessori Preschool Component
Hildegard Solzbacher, Primary Montessori Lecture Schedule

Affiliation with the Association Montessori Internationale — Amsterdam, Netherlands
AMI

CHILD DEVELOPMENT ASSOCIATE COMPETENCY STANDARDS

Competency 1
To Establish a Safe, Healthy, Learning Environment

1. Functional Area: Safe

The candidate is trained to provide a safe environment to prevent and reduce injuries.

MONTESSORI COMPETENCY STANDARDS

1. SAFE

Montessori Students will be able to demonstrate understanding in:

1. the prepared environment dealing with child's use of materials, clear availability of materials, workspaces delineated by tables and rugs, the taking of turns, the practical life exercises etc.

2. the role of the teacher in assisting the child in the use of the materials.

3. the arrangement of the materials to establish social relations and the right use of the materials for safe interaction and peaceful coexistence.

Lecture Schedule(Subject to Revision)
Summer 1--June 20-July 29, 1988

1. Dr. Montessori's Life
2. Human Tendencies
3. The Absorbent Mind
4. The Process of Adaptation
5. The Prepared Environment
6. The Role of the Teacher(Directress)
7. Freedom and Discipline
8. Deviations
9. Work and Normalization
10. Social Development and the Child
11. Observation of Children

Weekend Seminar--1989

1. Practical aspects of discipline with responsibility
2. A classroom environment that leads to normalization

2. Functional Area: Health

Candidate is trained to promote good health and nutrition and to provide an environment that contributes to the prevention of illness.

---

2. HEALTH

Students will demonstrate the following:

1. skill in observing and recording children's growth and developement within the context of the prepared environment.
2. integration of the exercises of practical life with the nutritional needs of the children (i.e., healthy snack, food preparation, cooking etc.)
3. skill in presenting principles of nutrition and good voluntary food habits to parents
4. integration of the study of food with the study of cultures

Lecture Schedule(Subject to Revision)
Summer 1--June 20-July 29, 1988

1. Human Tendencies
2. The Prepared Environment
3. Preliminary Exercies (Orientation to the Environment)
3. Spooning, Pouring, Folding
4. Care of Person/Dressing Frames
5. Care of Environment
6. Grace and Courtesy
7. Deviations
8. Work and Normalization
9. Observation
10. Development of Movement
11. Freedom and Discipline

Weekend Seminar--1989

1. Discussion on Environment and Normalization

Four Weeks Practice Teaching--1989-1990

3. Functional Area: Learning Environment

Candidate is trained to use space, relationships, materials and routines as resources for constructing an interesting, secure, and enjoyable environment that encourages play, exploration, and learning.

3.LEARNING ENVIRONMENT

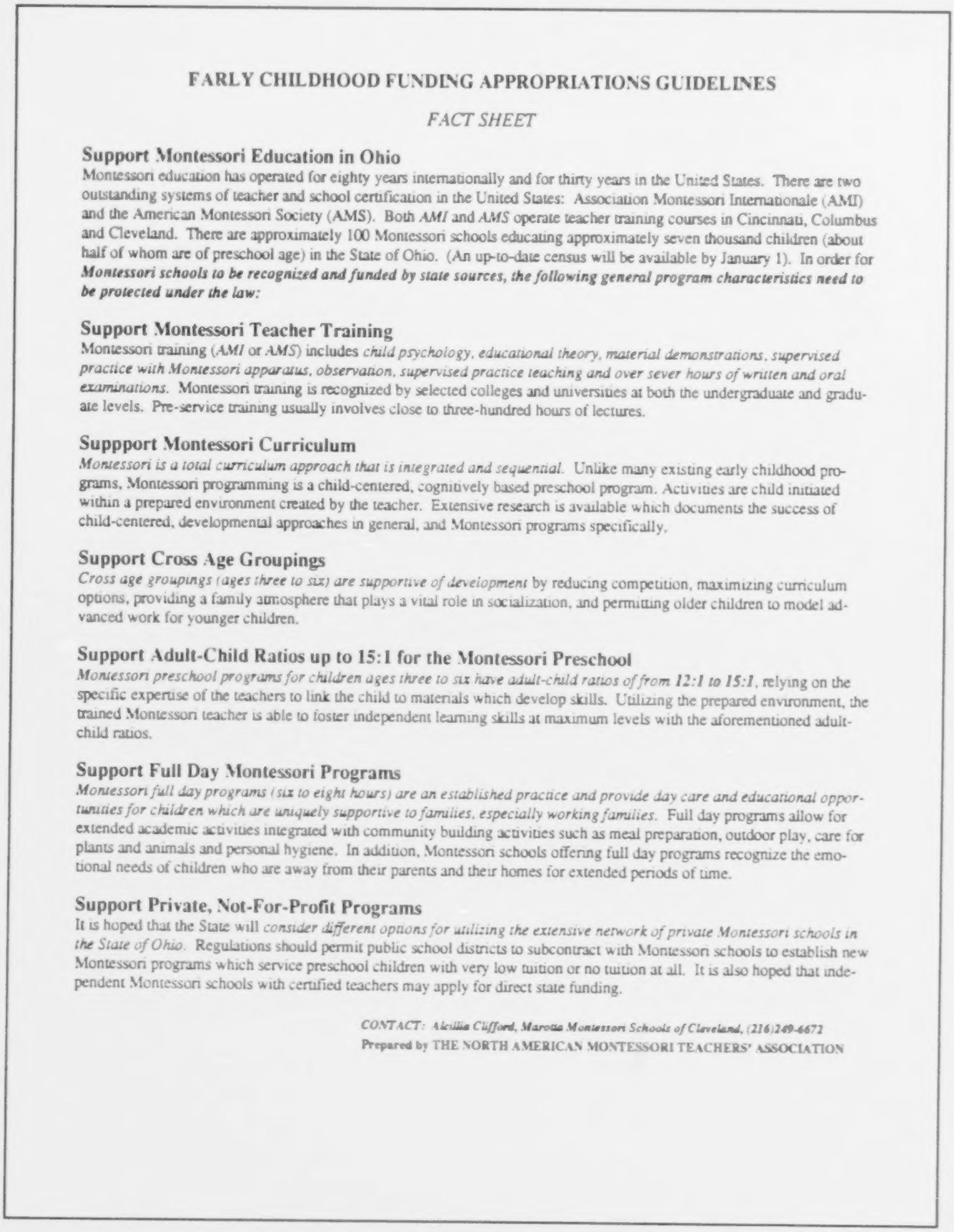
The Student will demonstrate theory, skills and attitudes about the following:

1. the understanding that cognitive and affective growth is promoted by a child's interaction with people and appropriately designed materials and activities.
2. the understanding that children's learning is often incidental rather than with specific intent to learn, and therefore, the environment must provide a natural setting, purposeful practical life and sensorial activity for the child to allow for indirect preparation for later academics.
3. the understanding that the child learns as a whole being in a holistic manner and that motor, cognitive and affective development are integrated requiring that the child have freedom of movement and choice.
4. the stages of development (planes of education) and their relationship to learning environments
5. the role of the teacher in assisting the child within the prepared environment
6. the scope and sequence of the Montessori practical life, sensorial, language, math and cultural materials (Montessori materials for development)

All lectures given in the Primary Course apply to this section.

Appendix 13: Early Childhood Funding Appropriations Guidelines Fact Sheet — Marotta Montessori Schools, Cleveland, Ohio

These guidelines provide state officials with a one page introduction to critical Montessori issues.



EARLY CHILDHOOD FUNDING APPROPRIATIONS GUIDELINES

FACT SHEET

Support Montessori Education in Ohio

Montessori education has operated for eighty years internationally and for thirty years in the United States. There are two outstanding systems of teacher and school certification in the United States: Association Montessori Internationale (AMI) and the American Montessori Society (AMS). Both *AMI* and *AMS* operate teacher training courses in Cincinnati, Columbus and Cleveland. There are approximately 100 Montessori schools educating approximately seven thousand children (about half of whom are of preschool age) in the State of Ohio. (An up-to-date census will be available by January 1). In order for ***Montessori schools to be recognized and funded by state sources, the following general program characteristics need to be protected under the law:***

Support Montessori Teacher Training

Montessori training (*AMI* or *AMS*) includes *child psychology, educational theory, material demonstrations, supervised practice with Montessori apparatus, observation, supervised practice teaching and over sever hours of written and oral examinations.* Montessori training is recognized by selected colleges and universities at both the undergraduate and graduate levels. Pre-service training usually involves close to three-hundred hours of lectures.

Suppport Montessori Curriculum

Montessori is a total curriculum approach that is integrated and sequential. Unlike many existing early childhood programs, Montessori programming is a child-centered, cognitively based preschool program. Activities are child initiated within a prepared environment created by the teacher. Extensive research is available which documents the success of child-centered, developmental approaches in general, and Montessori programs specifically.

Support Cross Age Groupings

Cross age groupings (ages three to six) are supportive of development by reducing competition, maximizing curriculum options, providing a family atmosphere that plays a vital role in socialization, and permitting older children to model advanced work for younger children.

Support Adult-Child Ratios up to 15:1 for the Montessori Preschool

Montessori preschool programs for children ages three to six have adult-child ratios of from 12:1 to 15:1, relying on the specific expertise of the teachers to link the child to materials which develop skills. Utilizing the prepared environment, the trained Montessori teacher is able to foster independent learning skills at maximum levels with the aforementioned adult-child ratios.

Support Full Day Montessori Programs

Montessori full day programs (six to eight hours) are an established practice and provide day care and educational opportunities for children which are uniquely supportive to families, especially working families. Full day programs allow for extended academic activities integrated with community building activities such as meal preparation, outdoor play, care for plants and animals and personal hygiene. In addition, Montessori schools offering full day programs recognize the emotional needs of children who are away from their parents and their homes for extended periods of time.

Support Private, Not-For-Profit Programs

It is hoped that the State will *consider different options for utilizing the extensive network of private Montessori schools in the State of Ohio.* Regulations should permit public school districts to subcontract with Montessori schools to establish new Montessori programs which service preschool children with very low tuition or no tuition at all. It is also hoped that independent Montessori schools with certified teachers may apply for direct state funding.

CONTACT: ***Alcillia Clifford, Marotta Montessori Schools of Cleveland, (216)249-6672***
Prepared by THE NORTH AMERICAN MONTESSORI TEACHERS' ASSOCIATION

FOR THE TRAINED MONTESSORIAN: ADJUSTING TO THE MONTESSORI KINDERGARTEN CLASSROOM OF ALL FIVE YEAR OLDS

by Hildegard Solzbacher

- ***In the beginning the Montessori kindergarten will need to be directed.***
- ***It is impossible for children to make up in one year what other children have done in three years or more.***
- ***While making up for lost time, Montessori five year olds must be academically challenged without compromising their self-motivation.***

This article does not recommend classrooms of all five year olds, but rather provides emergency advice for those confronted with this compromise.

Two-thirds of Montessori public schools begin their Montessori programs with five year olds. The following guidelines may help trained Montessorians who may have to adjust to five-year-old-only Montessori classrooms. Hopefully, such an adjustment is temporary.

When you place five year olds without previous Montessori training in a Montessori environment, you must realize that you cannot expect a group of children with the same reverence for the environment and eagerness to be busy all the time that you find with three year olds. In many cases, five-year-old children without Montessori backgrounds have experienced long periods of boredom, a lot of television, and may not have been held to appropriate behavior within a social context. Yet, first and foremost, the role of the directress is to bring the child to a level of inner discipline. How can this be done?

Yet, first and foremost, the role of the directress is to bring the child to a level of inner discipline. How can this be done?

In the beginning the five year olds need to be directed. Start class-wide group lessons with many presentations so that children can be independent as soon as possible. Present exercises objectively stating, "this is how we do it here." Make sure that the rules are simple to understand and consistently enforced by every adult in the environment.

For the first three to four weeks presentations should be group oriented, but not always class wide. Smaller groups may emerge relative to abilities, allowing children who are ready to work on their own to do so. Small group lessons are essential in order to make sure that the five-year-old child can be busy, independent and constructively engaged. If the children are not challenged, they will become bored and difficult to manage. *Group lessons can diminish when children are able to choose their own work, work responsibly, and put materials away.* Each class of five year olds will have different rates of readiness.

Hildegard Solzbacher is the Director of Training at the Midwest Montessori Institute. She has over thirty years experience in Montessori education as a lecturer, teacher trainer and examiner.

EARLY CHILDHOOD EDUCATION

Include activities that will build the group spirit of the class. These group games and songs include such activities as storytime. They will add to the liveliness of the group and will give you another perspective on the children.

Practical life (in group lessons) is a good starting point. Present those practical life exercises which entail responsibility for the environment. Simple exercises without a sequence of actions, such as simple pouring exercises, do not excite five year olds.

More interesting exercises might be: the lacing and tying frames, washing exercises, and polishing. Once the exercises are introduced, stress that they are individual, that each child will do his or her own work alone at first. At the beginning the whole group must be involved watching many activities — such as dusting shelves and preparing snack — because you cannot have children choosing work without knowing what to do. Also in the beginning, blocks, puzzles, and simple toys can provide children with activities while they are gaining skills using the Montessori materials.

Grace and courtesy lessons are practiced daily. Children are shown how to say "I don't want to be disturbed." Presentations are given in expressing emotions and in dealing with social relations. Already many children are expressing whom they like and dislike; these children need role-playing demonstrating desired behaviors.

Group presentations on spoken language, vocabulary enrichment and the sandpaper letters prepare the child as quickly as possible for the explosion into reading and writing. The movable alphabet can be introduced soon after, with two or three children working together.

Sensorial exercises are also appealing. Matching is an important preparation for reading. With the second color box and the geometric cabinet, emphasis should be on vocabulary related to these exercises. All of the spoken language lessons related to the sensorial materials should be given, utilizing in particular the game extensions. Language activities and memory work will be the foundation for reading later in the year. The sensorial materials provide a foundation for mathematics. It is important to expose the children to extensive use of the sensorial materials before introducing the math materials. If the math materials are introduced too soon, the sensorial materials will be abandoned, and the value of the indirect preparation will be lost.

Children need to be academically challenged, but not at the expense of their inner development.

The metal insets introduce the pencil grip and the left-to-right as well as up-and-down movements with the pencil. The geometric cabinet prepares children for *writing*, providing the teacher with key information as to competence in visual perception. Writing comes last.

Mathematical materials can be introduced after foundations in the sensorial materials are established. Since the children are older, that might be in about four weeks.

In conclusion, the teacher should not be overly concerned with the Montessori timetable for reading, writing and math skills. It is impossible for children to make up in one year what other children have done in three years or more. It is more important for the children to be "helped" by the adult than to force a higher level of learning. The children must be helped to take charge of their own work so that when they encounter the wider elementary environment they can handle the greater freedom. Montessori is a helping pedagogy and therefore excludes pushing and pulling simply to achieve learning goals. One of the most important aspects of the Montessori preschool is that children are sensitive to their own needs. This is what makes a Montessori classroom, and not a classroom of Montessori materials. Children need to be academically challenged, but not at the expense of their inner development.

SPECIAL EDUCATION

MONTESSORI AND THE SPECIAL CHILD

HISTORICAL OVERVIEW

RESOURCES

MONTESSORI AND SPECIAL EDUCATION

DEVELOPMENTAL DISABILITIES

Mainstreaming the child with special needs into the Montessori classroom has been successfully accomplished throughout the Montessori community both in the United States and abroad. Within the public school context, continued financial support and staffing of Montessori special education can expand the practice so that more children with special needs can be included.

SPECIAL EDUCATION

INTRODUCTION

MONTESSORI EDUCATION AND THE SPECIAL CHILD

One of the tenets of the Montessori approach has been the integration of disabled and non-disabled children working together in the same learning environment. Contemporary "mainstreaming" is in agreement with the Montessori approach which "has always placed important emphasis on the benefits gained through involving children of different abilities in the same environment" (Osterkorn, 1982).

In the case of disabled and non-disabled children working together, Helbrugge (1978) highlights the social and cognitive benefits. The non-disabled child makes a cognitive and social leap when communicating with a handicapped child who may be physically different and who communicates differently. The handicapped child benefits from having non-handicapped children model language, behavior, and movement which research shows has much greater impact than the adult model.

In the past eighty years of Montessori practice, Osterkorn (1982) cites successful application of the Montessori approach with blind children in Padua, Italy (Leonardi, 1957); with brain injured children in Washington, D.C., (Argy 1965); with mentally retarded children in Milan, Italy (Attias, 1977); with physically disabled children in Munich, Germany (Ockel, 1977); with learning disabled children in Toronto, Canada (Trass, 1982); with cerebral palsy children in Hellerup, Denmark (Hoff, 1966); and with emotionally disturbed children in Dublin, Ireland (Jordon, 1977).

A BRIEF OVERVIEW OF MONTESSORI SPECIAL EDUCATION

by Muriel W. Adcock

- ***Maria Montessori began her work with children at the mental asylum in Rome. She observed that they were hungry for meaningful activity.***
- ***She developed a method of education that successfully enabled children considered uneducable to learn new skills and increase their level of competence.***
- ***The individualized approach and the prepared environment developed by Dr. Montessori help children with and without disabilities to benefit academically, emotionally, and socially.***

INTRODUCTION

Dr. Montessori has stated that her work is founded on a "science that transforms the personality.... Whereas the ancient pedagogy in all its various interpretations started from the conception of a 'receptive personality' — one, that is to say, which was to receive instructions and to be passively formed, this scientific departure starts from the conception of an active personality — reflex and associative — developing itself by a series of reactions induced by systematic stimuli which have been determined by experiment" (M. Montessori, 1965, p. 73).

This concept of children having an active personality remains fundamental in the Montessori approach to the education of young children with and without special needs, and is why Montessori principles and practice can be particularly beneficial in classes which are mainstreamed and integrated environments where the children have a variety of abilities.

HISTORY

In 1896, after she graduated from medical school, Dr. Maria Montessori began working for the Psychiatric Clinic of the University of Rome. It was during this year that she began her work with children from the mental asylum of Rome. As a physician at the Clinic her duties included seeking out subjects for treatment. This involved visiting the asylum, *Manicomio di Santa Maria della Pieta.* At this time in history the conditions there were bleak and dehumanizing. All the adults and children, which included those who were insane, physically ill, mentally retarded and emotionally disturbed, shared the same living quarters. During her visits to this unfortunate place of human suffering, the patients themselves went to her and asked her to help the children. On one occasion she observed the children in their dark, empty room

---

Muriel Adcock received her AMI Primary Montessori Diploma in 1980 and her AMI Special Education Diploma in 1985. She is currently a master's degree candidate in early childhood special education at San Francisco State University and is completing research on the development of friendship between preschool children with and without disabilities. Ms. Adcock is also a full-time Montessori primary directress with a special interest in the area of education and culture.

SPECIAL EDUCATION

playing with crumbs on the floor and it occurred to her that these children were not starved for food but were hungry for meaningful activity. They were handling the crumbs for lack of any other form of mental stimulation. This observation so moved her that she began to research all prior literature regarding the education of young mentally retarded children using the works of Jean M. G. Itard and Edouard O. Seguin of France, who had done pioneering work with people who were hearing impaired and mentally retarded. Through intensive observation and direct work with children, she developed new education principles based on experimental psychology which incorporated her prior knowledge as a physician.

In 1899, Dr. Montessori became the Director of the *Scuola Ortofrenica* (Orthophrenic School) in Rome. This was a school for retarded children as well as a teacher training institute. It was here that she began to develop her materials and to work with the children in a learning environment. The children came to the Orthophrenic School from the regular schools of Rome where they were unable to participate. She spent two years at this school developing and refining her methods. Gradually it became apparent that something very special was happening in the classrooms. Children who had been described as uneducable began to learn new skills and increased their level of competence. When these retarded children were given the normal primary grade exams for regular children, they were able to pass, and some scored higher than the normal children. These amazing results led Dr. Montessori to consider what would happen if normal children were educated by these same methods.

***"Any contributions which we can make towards the training of deficient children — beings who have been excluded as it were from society — to become useful citizens is of immense importance"* (Dr. M. Montessori, 1932).**

In 1901 Dr. Montessori returned to the University of Rome to study philosophy. She believed that the work of Seguin, with its emphasis on sensorial learning and his idea of teaching abstract thought through concrete sensorial materials that children could see and touch, was based on psychological principles which could also be used in the education of normal children.

In 1907 in Rome she opened the first regular Montessori school *(Casa dei Bambini)* and began her work with normal children. Gradually as the news of her success spread, more and more schools opened. She was then invited to other continents to open schools and give lectures as interest in her method continued to extend throughout the world.

These principles developed by Dr. Montessori provided opportunities for learning to children with disabilities through carefully designed educational tasks in a prepared environment of sensorial materials. Her research showed how even the severely disabled child is able to learn and achieve a greater level of independence through interaction with the environment using specifically designed instructional tasks. Her work also showed how psychological deviations could be overcome through this meaningful activity in a prepared learning environment. The "active personality" of the child participates in a psychological process of self-construction by means of interaction with the external environment.

Dr. Montessori wrote many years later:

> From the very beginning in my work with deficient children I felt that the methods which I used had in them nothing limited to the instruction of the retarded. I believed that they contained educational principles more rational than those in use. I became convinced that similar methods applied to normal children would set free their personality in a marvelous and surprising manner.

CURRENT APPLICATIONS

"Any contributions which we can make towards the training of deficient children — beings who have been excluded as it were from society — to become useful citizens is of immense importance" (Dr. M. Montessori, 1932).

SPECIAL EDUCATION

The Montessori classroom allows each child to work individually at his or her own pace and level with the careful guidance of the teacher. Through detailed observation of each child's active personality and learning process, the prepared and highly trained teacher is able to provide appropriate instructional tasks which will nurture the child's physical, intellectual, and emotional development. This individualization within the learning environment helps children with and without disabilities to benefit both emotionally and socially. The order and structure of the Montessori prepared environment offer a sense of security for the child. This external structure and consistency allows the child to develop a sense of trust in the environment as he or she experiences predictability in daily events. This sense of security can help the child with disabilities feel more confident and thus more comfortable with learning new concepts. The social organization of the classroom is non-competitive. Each child works at an individual pace so that there is no psychologically threatening pressure to perform at the same level as other non-disabled children.

The Montessori classroom also incorporates a special attitude of respect for each child as an individual with potential. This respect nurtures self-esteem and joy in learning in all children. The beauty and nature of the prepared environment encourages relaxation and concentration as well as respect for living things. Gradually the children will begin to internalize the external order of the environment and thus enhance their ability to take in information and order it in the mind. This mental ability is of particular importance to children with disabilities who do not take in information as clearly. The emotional atmosphere of the classroom supports the emotional development of the children in it. The teacher participates in this process through skilled observation techniques and intensive specialized pretraining which provide him or her with a sensitive understanding of the needs of each child.

THE MATERIALS

The Montessori materials help provide order and structure in the classroom and may assist in motor development and perceptual functioning. The attractiveness of the material encourages the child to develop attention, interest, and concentration. The instructional tasks provided in the materials give the child a sequence of movement, form, and symbol appropriate to each child's individual level which forms a foundation for classifying and categorizing information which in turn helps the process of generalization — a critical skill for knowledge acquisition and therefore of special importance to the child with special needs. The self-correcting quality of the materials provides the child with opportunities for success without adult intervention. This quality is especially important for children with special needs who often have more difficulty acting independently and feeling successful.

It is the structure, individualization, and opportunities for success provided in the Montessori prepared environment which allow for the education of children with very different needs and abilities within the same classroom.

SOME CONSIDERATIONS

In order to integrate or mainstream children with disabilities, the individual children need to be assessed. The individual program needs to be planned so that the child's abilities and disabilities can be identified. Staff training and prior experience with children should also be considered as the success of the program will be related to the appropriate training and the inner resources of the adults in the environment. It is also important to know what resources are available in the community for children with special needs and for teachers who would like further information on various related subjects. The physical design of the facility and daily routine should be evaluated along with the availability of outside professional services. Children with disabilities will need to be assessed on an ongoing basis. The adults who work with the children need to have an understanding of what normal development is before they work with children who have special needs so that they may better understand special needs and individual difference. The staff should also be prepared for parent education regarding children with special needs.

There are many different types and degrees of disabling conditions. Teachers will need specific information about their individual students. The introduction of new children into a class will need to be planned. All children need to feel accepted and valued as individuals.

SPECIAL EDUCATION

BIBLIOGRAPHY

Affleck, Marie, A. E., "Why Montessori for Deaf Children." *NAMTA Quarterly,* Volume Six, Number Two, Spring 1987 pp. 28-32.

Anastasiow, Dr. Nicholas J., 1986. *Development and Disability.* Paul H. Brookes Publishing Co., Baltimore.

Argy, William P., 1965. "Montessori Versus Orthodox: A Study to Determine the Relative Improvement of the Preschool Child with Brain Damage Trained by One of Two Methods," *Rehabilitation Literature,* Volume 26, Number 10.

Briggs, Dorothy Corkille, 1975. *Your Child's Self-Esteem.* Doubleday & Co., New York, Dolphin Books Ed.

Featherstone, Helen, 1981, *A Difference in the Family.* Penguin Books, New York.

Guralnick, M. L., 1975. *Early Intervention and the Integration of Handicapped and Non-Handicapped Children,* edited by M. Guralnick. University Park Press, Baltimore.

Joosten, A.M., 1971. "Maria Montessori and the Education of the Retarded," *Around the Child,* Volume XIV.

Jordan, Nancy, 1976. "The Maladjusted Child in a Montessori Setting," *AMI Communications,* pp. 10-17.

Kramer, Rita, 1977. *Maria Montessori.* Capricorn Books, G.P. Putnam's Sons, New York.

Lillard, Paula Polk, 1972. *Montessori A Modern Approach.* Schocken Books, New York.

Montessori, Maria. "Education of Defective Children," *Saturday Review,* Volume 153, January 2, 1932, p. 7.

Montessori, Maria 1965. *Spontaneous Activity in Education.* Schocken Books, New York.

Montessori, Mario M. Jr., 1976. *Education for Human Development,* edited by Paula Polk Lillard. Schocken Books, New York.

Neisworth, John T. and Bagnato, Stephen J., 1987. *The Young Exceptional Child,* Macmillan Publishing Co., New York.

Notes from the AMI Special Education Course, Mountain View, California, 1985, Dr. Jon R. Osterkorn, Director.

Osterkorn, Dr. Jon R., 1987. Personal communication.

Standing, E. M., 1957. *Maria Montessori, Her Life and Work.* Mentor Books, The New American Library.

Wright, Beatrice A., 1983. *Physical Disability-A Psychosocial Approach,* second edition. Harper & Row, New York.

SPECIAL EDUCATION

ADDITIONAL RESOURCES FOR PARENTS, ADMINISTRATORS AND TEACHERS

Alexander Graham Bell Association for the Deaf
3417 Volta Pl. NW
Washington D.C. 20007-2778
(202) 337-5220

American Cancer Society
4 W. 35 St.
New York NY 10001
(212) 736-3030

American Coalition of Citizens with Disabilities
494 Westchester Ave.
Yonkers NY 10707

American Council of the Blind
1010 Vermont Ave. NW
Suite 1100
Washington D.C. 20005
(202) 393-3666
(800) 424-8666

American Juvenile Arthritis Organization (AJAO)
Arthritis Foundation, National Office
1314 Spring St. NW
Atlanta GA 30309
(404) 872-7100

American Printing House for the Blind
1839 Frankfurt Ave.
P.O. Box 6085
Louisville KY 40206
(502) 895-2405

American Society for Deaf Children
814 Thayer Ave.
Silver Spring MD 20910
(301) 585-5400

Association for Children with Learning Disabilities
4156 Library Rd.
Pittsburgh PA 15234
(412) 341-1515
(412) 341-8077

Association for Persons with Severe Handicaps
7010 Roosevelt Way NE
Seattle WA 98115
(206) 523-8446

Association of Birth Defect Children
3526 Emerywood Ln.
Orlando FL 32806
(305) 859-2821

Asthma and Allergy Foundation of America
1302 18 St. NW
Suite 303
Washington D.C. 20036
(202) 293-2950

Compassionate Friends Inc.
(child has died)
Box 3696
Oak Brook IL 60522-3696
(312) 323-5010

Congress of Organizations for the Physically Handicapped
16630 Beverly Ave.
Tinley Park IL 60477-1904
(312) 532-3566

Epilepsy Foundation of America (EFA)
4351 Garden City Dr.
Landover MD 20785
(301) 459-3700

SPECIAL EDUCATION

Foundation for Children with Learning Disabilities
P.O. Box 2929
Grand Central Station
New York NY 10163
(212) 687-7211

Immune Deficiency Foundation (IDF)
P.O. Box 586
Columbia MD 21045
(301) 461-3127

National Association for Parents of the Visually Impaired
P.O. Box 180806
Austin TX 78718
(512) 459-6651

National Association of Mothers of Special Children
9079 Arrowhead Ct.
Cincinnati OH 45231

National Association of the Physically Handicapped
1601 N. College—71
Fort Collins CO 80524

National Center for Education in Maternal and Child Care
38th & R Streets NW
Washington D.C. 20057
(202) 625-8400

National Center for the Prevention of Sudden Infant Death Syndrome
330 N. Charles St.
Baltimore MD 21201
(800) 638-7437

National Down Syndrome Congress
1800 Dempster St.
Park Ridge IL 60608-1146
(312) 823-7550
(800) 232-6372

SPECIAL EDUCATION

MONTESSORI AND SPECIAL EDUCATION

by Rae Rosen

- ***The Education of all Handicapped Children Act (PL 94-142) stipulates that all handicapped children are entitled to free, appropriate public education.***
- ***Since PL 94-142 there has been increased awareness, accountability, and the mainstreaming of handicapped children into classes of non-handicapped children.***
- ***Montessori education is a unique opportunity to meet the needs of handicapped children.***
- ***Bennet Park Montessori Center in Buffalo, a public school magnet, successfully incorporated a special education program in its building.***
- ***Montessori should be considered seriously as a program option to meet the special needs of handicapped children in the public schools.***

The Education for All Handicapped Children Act, commonly known as PL 94-142, is a landmark piece of legislation stipulating that all handicapped children, aged three to thirteen years, are entitled to a free, appropriate public education. The major requirements, which must be adhered to by every state and its localities, include:

- assurance that special education is provided to all handicapped children in the "least restrictive environment"
- assurance of the maintenance of an individualized education program (IEP) for all handicapped children, developed jointly with their parents or guardians
- assurance of early identification and of "full service" goals (i.e., provision of all the related services, such as speech, physical or occupational therapy, needed by the handicapped child).

PL 94-142 also included a special incentive grant of $300 per child to encourage the states to provide special education and related services to its *preschool* children, but it will not be until the 1990-91 school year that public schools *must* provide a free, appropriate educational program for all three- to five-year-old children with handicapping conditions.

The most obvious results of this mandate have been an increased accountability for referral, evaluation, placement and review procedures, an emphasis on staff development to create greater sensitivity and awareness of children with special needs, and an increase in "mainstreaming" (i.e., integrating a child with a handicapping condition with non-handicapped children for all or part of the day).

The rights of handicapped children were also expanded as a result of court-ordered desegregation plans. Advocates for the handicapped joined civil rights plaintiffs in several large urban school districts to assure greater access and equity for their clients.

Montessori education presents a unique opportunity to meet the needs of handicapped children. Maria Montessori did some of her most significant work at the Orthophrenic School in Rome, Italy, following her graduation from medical school. The Orthophrenic School was a state institution for the "feebleminded"

Rae Rosen is Principal Emeritus of Bennett Park Montessori Center in Buffalo, New York and is currently a freelance consultant for Montessori public schools.

SPECIAL EDUCATION

(probably a generic term for the handicapped). Building on the work of two French physicians, Edouard Seguin and Jean Marc-aspard Itard, she sought to humanize the institution and elevate the care of children to something more than custodial management. Montessori achieved a stunning success! Her pupils were able to make remarkable progress in learning basic skills although they had been assumed to be unteachable. She developed many unique methods and materials that roused the children from their lethargy and stimulated their curiosity for learning. This legacy still challenges us.

Montessori later began to train teachers to use her approaches, teaching them how to "take their cues" from the child. She showed them how to match the materials to the child's developmental needs and how to individualize instruction through their observation of the child as he interacted with the materials.

The respect for the child that is so inherent in Montessori's approach inevitably leads him to develop respect for himself and others. It is through this respect, granted automatically and unconditionally to the child, that he learns to trust himself and the environment. Trust is also established through the permanence of the materials on low, accessible shelves. They appear in their predictable order and in their predictable space. The child comes to depend upon them as familiar aids in his own growth and development.

Theresa Hahn (1977) urged Montessorians to help meet the needs of handicapped children soon after the enactment of PL 94-142:

> I have seen Montessori work for the handicapped child and at the same time watched the normal child benefit from contact with those children who need their love and compassion. With the current national legislation enforcing a mainstreaming approach in the public schools, we as Montessorians should open our hearts and classrooms to those kinds of children who once inspired Montessori in her initial work, educating the human potential.

The Bennett Park Montessori Center, one of the Buffalo Public School's magnet school programs, has successfully incorporated a special education program within its building. The school, opened in 1977, houses 600 children aged three to thirteen years. There are approximately sixty children with handicapping conditions attending the school and receiving a Montessori education.

Montessori education presents a unique opportunity to meet the needs of handicapped children.

A primary consideration in implementing the special education program at the Bennett Park was teacher preparation. A preschool Montessori training program (3-6 yr. level) had been initiated in Buffalo through the joint efforts of the Montessori community, public school officials, and teacher education professors as part of the preparations for desegregated schooling. The Buffalo Board of Education initially agreed to pay for the staff development costs before opening the school, since there were no teachers in the school district who held a valid Montessori credential. Several Special Education teachers volunteered to participate in the training courses offered by the Buffalo Montessori Teacher Education Program in 1978-80.

Two self-contained primary level classes for children with emotional handicaps were begun in 1979, the third year of the school's existence, and a class for the educable mentally retarded was implemented the next year. The Department of Special Education allotted sufficient funds to equip these classrooms with a full complement of Montessori materials and to staff each class with an appropriately trained Montessori/Special Education teacher and a full-time aide.

Although these classes were adequately staffed and equipped, there were many obstacles to establishing a successful program. For one, the children were assigned by the placement office of the Special Education Department, often just before the opening of school. The rest of the school population is drawn by lottery after parents have made application to the program, assuring racial and sexual balance. Fixed assignments to the Special Education classes were often made solely on the availability of space. This precluded any contact with parents prior to the arrival of the children at school. They usually appeared alone, coming by bus, with no idea of what to expect. Parents had been given no orientation to the school and had had no opportunity to participate in the decision to place their children in a Montessori environment.

The handicapped children thus placed at Bennett Park were often as old as nine, although it had been stressed that the probability of success was greater if they entered the program at a much younger age. The pupils were almost always boys and were predominately minority children — again, noticeably different from the heterogeneous classes throughout the school. They most likely had been newly identified as handicapped, had previously experienced many negative interactions with adults and peers, and usually appeared to be more aggressive than many children in the school. When several new students arrived at once, it was very difficult for them to adjust to the new expectations for their work and behavior. Each time a new child appeared, the tenuous newly established patterns of the others slipped back and old habits resurfaced. Fortunately, the staff has learned to recognize and anticipate these situations and they have developed much greater sensitivity to the needs of the children.

One way the placement problems have been reduced is by identifying children with handicapping conditions within the existing school population. Through skilled observation, children are occasionally seen as needing more support and attention. Every effort is then made to meet the child's needs in the regular classroom, including spending four years instead of three at the preschool level. This is not perceived as failure, but is comparable to the non-graded primary programs of the '60s, when children were not hurried to complete predetermined or inappropriate objectives. If this extra time does not result in reasonable growth, the child may be referred to the Committee on Special Education for evaluation. Resource Room service is usually recommended for such children since they usually display less severe learning and behavioral difficulties than those who require placement in a self-contained Special Education class.

Today there are two Resource Rooms and two self-contained classes at Bennett Park. There no longer is a class for the retarded. Most of the children are labeled as learning disabled (LD) or emotionally disturbed (ED). There also are two visually impaired students and three children with physical handicaps placed in regular classrooms and receiving itinerant service.

All of the Special Education students are thoroughly integrated into the daily life of the school. Many travel to and from school on the regular school buses, not on those transporting only the handicapped. They participate in all the school activities, performing in plays, singing in the chorus, going to camp overnight and *learning.*

Mainstreaming is a goal set for each Special Education student. It is begun as soon as possible by utilizing the school visiting policy: any child of any age may visit in another classroom for a day, as often as he likes, if it is mutually agreeable to sending and receiving teachers. Special Education children visit, too. They may invite friends to visit them. When the handicapped child's teacher anticipates asking for a reclassification from "self-contained" to "resource room," she works out a "trial mainstreaming" period with a teacher who has been accepting him as a frequent visitor. He now becomes a "regular visitor," spending a portion of every day in the same classroom. The host teacher may include him in a reading or math group or invite him to join a cultural subjects lesson. Both teachers confer often to assure that the child's experiences are positive ones and that growth is continuing. If this trial mainstreaming is successful, the parent will come in for a conference to discuss the re-evaluation process and to participate in the decision to ask for a change in the child's placement. The parent and the teacher both attend the CSE meeting to suggest that the child remain at Bennett Park if resource room service is recommended.

Support is then provided for the teacher as well as the child to assure a successful transition to a totally mainstreamed environment. The Resource Room teacher will visit the classroom frequently during the first few weeks of school, offering suggestions for classroom management, learning strategies and support materials. She will offer advice to the child on how to manage time more effectively, try to help him develop better study skills and support his efforts to make new friends. If the child experiences difficulty in the transition to a regular classroom, the teacher may request a "Case Conference."

The Case Conference is a weekly meeting of the support staff (i.e., Special Ed Resource Room teachers, Speech Therapist, Chapter 1 specialists, Program Coordinator, school administrators) to discuss children with special needs. The classroom teacher may ask to join a session and share her concerns about a mainstreamed child or anyone who is experiencing difficulty in the classroom. The Case Conference group reviews the child's background and school history, perhaps providing some new insights for the teacher, and suggests strategies for meeting the child's needs. A parent meeting may be arranged as a result of the case conference to enlist help in working with the child. Counseling may be suggested to the parent as a way to provide additional support. For a child who is not presently identified as handicapped, an exploratory psychological evaluation may be in order. The parent must agree to this before the school can request the evaluation, however. There may be a need for further testing and, eventually, a referral to the Committee on Special Education, but this is always a joint decision between home and school.

Bennett Park is currently exploring the "consultant teacher" model as a new direction for its special education program. A specially trained teacher (one of the present Montessori/Special Ed staff) would assist a classroom teacher who would have twelve handicapped children as well as twelve "at-risk" students in the same classroom. The identified children would not be severely handicapped but would still require considerable support services. Since many of the Special Education students are so well integrated into the Montessori mainstream, this new concept may prove beneficial to them.

The challenges posed by children with special needs are difficult and sometimes overwhelming. The opportunities that Montessori education provide in a prepared, respectful and peaceful environment are unsurpassable. Montessori education should be looked at seriously by every concerned educator.

SPECIAL EDUCATION

MONTESSORI AND THE CHILD WITH DEVELOPMENTAL DISABILITIES

by Nimal Vaz

- ***Children with developmental disabilities may go undetected, sometimes for too long, because of the absence of conventional symptoms of disease.***
- ***Subtle disabilities in childhood run the risk of turning into major disabilities in adolescence.***
- ***Dr. Montessori believed that "psychic deviations" could be normalized through work chosen by the child.***
- ***In the Montessori classroom, children learn to use the mental capacities they have.***
- ***High quality early intervention and a curriculum and services that minimize weakness may eventually prevent learning disabilities.***

Let us at the outset try and find out who are these children with developmental disabilities. An infant may sometimes experience slight damage to a part of his nervous system before birth, during birth, or soon after birth. A young child may also experience some damage to his nervous system by an accident. The resulting insult may not be immediately observable. Later on, however, as the child matures we would notice that he is not functioning as he should. Kinsbourne tells us that:

> It is the failure of the normal timing of development of the relevant function. The function which is involved will develop later and more slowly. There will be a developmental lag with respect to the function to be subserved by the damaged area, irrespective of the etiology of the damage. So what we see after perinatal trauma or other insult is that a particular skill comes in late. With respect to that skill the child behaves like a normal younger child.

IDENTIFYING DEVELOPMENTAL DISABILITIES

How can one identify these children? When is the onset of the neuro-developmental disability? The onset can unfortunately be at any time. Some mothers can even talk of the baby being very active in the womb. Others comment on difficult babies who are whiny, don't sleep well, and have temperamental traits. The onset could also be during the toddler years. It seems possible for developmental disabilities to occur at any time from 2 to 22 years. If the child is an only child, the behaviour manifestations of developmental disabilities may be discovered late as he has been the centre of attention for a while and nobody notices anything. On the other hand, if the child comes from a large family, discovery will also be delayed in all the commotion caused by the other siblings.

Recent research seems to show that some attention deficits are observable early in life. But deficits in attention that result in selective learning disabilities are usually apparent after entry into the school setting. School makes certain demands on the child which the child may not be ready to meet. Some children exhibit

---

Mrs. Nimal Vaz was graduated from the University of Ceylon. She earned her A.M.I. diploma in 1964 and later her M.A. in Special Education at Arizona State University. She gained teaching experience in both Ceylon and the U.S. and since 1972 has directed a class for children with Learning Disabilities at Good Samaritan Hospital in Phoenix, Arizona. On the death of her aunt, Dr. Lena Wikramaratne in 1982, she took over the direction of the A.M.I. Training Centre in Phoenix. Article reprinted by permission of the author.

learning problems as soon as they begin to receive formal instruction. Others may not be discovered until they reach elementary school.

The reason why many children with developmental disabilities tend to go undetected sometimes for too long is because of the absence of conventional symptoms of disease. In examining the nervous system, a distinction is made between hard and soft signs. A hard sign is something that tells a physician that it is a sure sign of a disease — like an arm that is paralyzed. We all know that this is not a normal development. A soft sign of developmental disability is one that you will not be able to tell for certain, unless you know the age of the child. Keep in mind that the developmentally disabled child has the added invisible handicap of looking normal.

Dr. Marcel Kinsbourne puts it this way: a soft sign represents a persistence of a primitive form of response on the one hand, and represents a failure on the other in a certain performance — "the child fails to do something which at his age he ought to be able to do."

Over 70 years ago Dr. Montessori had the same view. Speaking of psychic deviations she tells us that deviations from physical normality are easy to recognize because of visible malformation. Deviations from mental normality do not advertise their presence very clearly. As a child develops, according to Dr. Montessori, the two streams of energy — the physical and mental — should be balanced and expended in voluntary movements. The two streams should never be operated separately. Should the two parts of the psyche, mind and body, be separated instead of being intimately bound together, the result is deviations from the norm. This is exactly what we find in the child with neurodevelopmental disabilities today.

Dr. Melvin D. Levine, Professor of Pediatrics of Harvard University and Boston Children's Hospital, gave a presentation in Phoenix on "Attention in Childhood — A tension in childhood." He was of the opinion that longitudinal studies have realized the high prevalence of low severity handicaps in children with developmental lags. These subtle disabilities in childhood run the risk of turning into major disabilities in adolescence. He brings together many of the characteristics of children with developmental disabilities under the heading "attention deficits." These deficits have been grouped under four basic "lesions": altered focus, distractibility, unintentionality and impaired feedback.

ATTENTION AND ATTENTION DEFICIT DISORDERS

Before discussing the characteristics of children with attention deficits let us take a moment to dwell on the normal process of attention. All of us are constantly bombarded by various incoming sensory stimuli. As I am talking to you this afternoon, there are various stimuli competing for attention. The central nervous system is inundated with the possibilities of auditory stimuli, visual stimuli, memories and associations. The central nervous system can take in only one or two selected stimuli at a time. Therefore, it is a major human competence to select what one's primary attention should be. Attention has to be continuously reinforced. For a child with a central nervous system that is damaged, this presents a very real problem and results in neurodevelopmental disabilities. These children find it difficult to:

- select the stimulus set which contains the most knowledge.
- select the stimulus set which gives them the most pleasure.
- select the stimulus set which will lead them to a new product.

At the present time we see a growth in the population of our children who are continuously selecting the wrong stimulus sets. This is called an attention deficit disorder and relates to the four basic areas: altered focus, distractibility, altered intentionality and impaired feedback.

Altered Focus

The first characteristic of altered focus is the child who always seems to be selecting the *wrong* stimuli. It is almost as if you have a T.V. turned on with no channel selector. A child who has his circuitry jammed is a child unable to make a decision because he has trouble selecting the sensory stimuli for attention. This child also has difficulty with detail. He can get the big picture, but not the little details. This is the child who does very well grasping the "functions" of the decimal system but makes many careless mistakes in working on individual math problems. He can probably teach a math course but will get the answers to the problems wrong. This child is also the glib talker, who talks his way out of any situation. He very probably will not be identified as a developmentally disabled child until he reaches elementary school.

Because of the child's altered focus and his inability to select suitable stimuli he tires very easily. He manifests the symptoms of fatigue. He yawns, stretches, scratches and fidgets. He also shows symptoms of early burnout. The child probably has a history of difficulty in falling asleep, from infancy to adolescence. The sleep pattern is a very fretful, disorganized one. The observation is made that the child seems to be running around all the time, trying to keep awake. This is true, because as Dr. Levine says, the reticular activating cerebral cortical system seems to be stuck at midpoint in these children also causing inappropriate time allocation. This leads to a dysrythmia of nocturnal balance — which means they are night people — up and going all night. Once the child is an adult he will do well, but unfortunately what are we to do in the meantime? This causes a major management problem at home for the parents. Some physicians in these instances recommend pharmacotherapy. The drug Ritalin seems to control the behaviour of these children, however it does cause some undesirable side effects.

The child, because of his failure to prioritize appropriate stimuli, is excellent at incidental learning. He seems to have an encyclopaedic knowledge of irrational things — remembers the room number of a motel the family stayed in during a visit to Disneyland three years ago but does not remember a telephone number or the number of the page of homework. The parents will tell you that he has a wonderful memory. In reality it is a poorly selected memory. Another common characteristic of this group is inappropriate time allocation. He may perseverate on a task or be impersistent.

Distractibility

The next basic attentional dysfunction is distractibility. Distractibility presents in four basic modalities: sensory, free flight, insatiability, social. Here is a brief review of each of these characteristics as it applies to children.

Sensory distractibility may be visual or auditory. This child's notion of visual saliency is usually irrelevant observations. Montessori comments on this fact in her observations of very young children in *Secret of Childhood*. In older children, however, this constitutes a developmental and learning disorder. This is the child who could have problems discriminating foreground and background areas, who cannot differentiate correctly between the black letters and white spaces on a page of the printed word. This child has problems with the position of letters in space, reversals and inversions.

Auditory distractibility is prevalent also in the children who are so finely tuned to sounds that they can hear a fly walk on a window. They cannot hear the teacher's voice for the hum of the air conditioner. These children are difficult to deal with at school because it is demanded of them to put forth sustained attention to auditory stimuli. This deficit is not so noticeable at home, as the same demands are not made of the children.

We now have the characteristics of free flight — flights of fancy — where the child's mind drifts away on daydreams. The child is constantly tangling with tangential relationships (looking out the window he notices kites flying, reminds him of an airplane, New York, etc.). He could also be distracted by insatiability, by his own appetite. He seems to have constant trouble delaying gratification. These children could end up having serious problems as adults. This is the child who is also chronically restless and is a most intolerable child when it comes to equanimity and peace. His behaviour patterns lead him to provoke people all the time — so much so that it becomes a serious issue for parents. Siblings take the brunt of the child's behaviour. Here is the child who cannot tolerate the present but is always looking ahead for something else to do. In time he will probably end up as the president of a Fortune 500 company. Meanwhile, we need to channel his energy. Because of this child's extreme social distractibility he has great peer awareness. Many children are tuned in to other children. For this child the pressure is so intense that he absolutely cannot seem to be able to leave other children alone. He is not good at shutting off social vibes. However, in the Montessori classroom, constantly reminded of the main rule that he may not disturb other children at work, he is not allowed to be a constant provocateur.

Altered Intentionality

The third major lesion is unintentionality. Most of us do things intentionally. Our actions are intentional and purposeful. These children have attention-intention deficits. Most of us think before we act. These children do not have an editorial board reviewing their actions before they perform them. They say what most people only think. Their candour constantly gets them into trouble. They embarass their parents most of the time. They are tactless. This is the child who is very impulsive — he is liable to hit out first and think later. The child will usually tell you that "it just happened." His impulsivity also makes him do things hurriedly in order to get them over and done with. These children substitute haste for diligence, do their work poorly, quickly, and present many careless mistakes.

Performance inconsistency is also a marked characteristic of these children. Now, here is something impossible for teachers to comprehend. How can the same child do something well one day and be unable to do it the next? But, as Dr. Levine tells us, "this is a comfortable conclusion in medicine" as symptoms, for example, in asthma come and go. In the field of sports too this is a well understood concept. Schools will do well to understand this.

Neuromotor disinhibition is another phenomenon. The normal child is neuromotorically selective. The child with neuromotor problems is not selective. This applies to associated movements, overactivity, fidgetiness, and whole body hyperkinesis. This child is not able to close his hands leaving two fingers out. He either closes both hands or leaves all fingers out. As the child matures motorically his motor overflow problem begins to be controlled. This is also the child who, when he writes, sticks his tongue out. As he develops, his movements will become more skillful and precise.

These children can also be hyperactive or hypoactive. Earlier, it was thought that more boys than girls were learning disabled, because more boys presented as hyperactive. Today we know that many girls with attention deficits are mostly hypoactive. They get lost in the classroom because they are quiet and do not trouble the teacher. The danger here is that they may not be picked up and diagnosed until it is too late. The issue seems to be, therefore, that these children have a problem with attention and not hyperactivity. Speaking of hyperactivity, Dr. Kinsbourne identifies three types of hyperactive children in the classroom:

1. The child who does not understand what the teacher is saying. This may be because of a language problem or due to the fact that their mental capacity cannot handle the task.
2. Children who are constantly anxious, beset by emotional problems, are hyperactive.
3. The *real hyperactive* — the young organically hyperactive child. This child is happy and hyperactive in any situation. Unlike the earlier two types, his hyperactivity is not situational.

The cure for the hyperactivity is control. The child is taught to control himself. The ability to control one's attention and focus it develops slowly, even in normal children. In our school the child is gradually taught to control and concentrate. Dr. Kinsbourne also is of the opinion that "hyperactivity is rare in the Orient." While this may be genetic, he says that traditional societies may make these children so anxious that they somehow manage to control themselves. Medication sometimes makes good management of the hyperactive child and sometimes not. Threats and punishments are surprisingly ineffective. They usually resort to the child spiralling into a frenzy of disobedience. For this reason Kinsbourne says behaviour modification is relatively ineffective. What we find to be very effective is the controlled structure of a prepared environment such as the Montessori classroom.

Task impersistence is a common characteristic of these children. In talking about a broad spectrum of children we see that many children seem to suffer from attention deficit disabilities. The child with a language disability may tune you out. If the child has trouble processing language the same thing may happen. Children who are chronically anxious due to emotional problems or home environment, may have attention problems that make task-persistence difficult. Dr. Montessori, over 50 years ago, recognized, understood, and knew what to do with this problem. Quoting from Standing let me say that: "It may surprise some readers to learn that Montessori also includes in her list of deviations that marked instability of attention which most psychologists regard as an essential feature of childhood" (p. 172).

Impaired Feedback

Impaired feedback is a common characteristic of these children. We see children who have uneven self-monitoring systems; children who do not learn from experience; cause and effect have to be repeated too many times before they get the message. Socially they are imperceptible; they have little social knowledge; they seem to be unaware of many hidden rules in society. They are unable to read rules of a social situation and fit into it. They are not able to reinforce the good initiative of their peers, nor are they able to pace themselves in a relationship. Generally, the child with the developmental disability will be controversial, neglected, or rejected outright by his peers.

MONTESSORI'S TERMS FOR ATTENTION DISORDERS – PSYCHIC DEVIATIONS

Many of these characteristics are common in most children. Dr. Montessori, in fact, describes each one of these and more in her chapter on "Psychic Deviations" in *The Secret of Childhood*. Many of us, ourselves, have some of these symptoms in isolation. Those of us who have isolated problems are resilient and we can overcome them. However when a child has more than one of these problems or a cluster of symptoms, that is when a real learning disorder surfaces.

Let us at this point look at attention disorders in the light of Dr. Montessori's "Psychic Deviations." We are all aware of the fact that the so called *normal* child is a figment of "statistician's" imaginations. Montessori, writing on "True Normality" in her book *The Secret of Childhood* (p. 108) tells us: "Development has been arrested or, rather, been turned into a wrong direction in *all children* – in children of every social condition. The spread of our schools over the world, among every race, will prove this child conversion to be general fact, common to all mankind." She goes on to say: "Thus at the origin of life, in the small baby, errors are constantly being made, deforming the natural psychological type of man, and leading to an infinity of *deviations*."

Dr. Montessori's list of the characteristics of psychic deviations reads almost like the list of characteristics of the child with attention deficits that I gave you earlier. Here is Dr. Montessori's list: destructiveness, disorderliness, disobedience, laziness, greediness, selfishness, quarelling, naughtiness, and also the so-called creative-imagination-delight in stories, affectionate attachment to persons, submissiveness, play and so on.

In the psychic deviation called a "fugue" the child's mind flees into a fantasy; movement is disordered and purposeless. In the deviation called "Barriers," the mind of the child has withdrawn into a defence against the world. Intelligence has been supressed – instead of fleeing, it has withdrawn within itself. Montessori tells us: "Here is one of the plainest signs that the deviated child has a diminished intelligence, for he does not possess his mind nor can he lead it forwards in full development." This particular deviation Dr. Montessori feels is the more difficult to correct.

The psychic deviations of the dependent child, in Dr. Montessori's writings, remind us of the developmentally disabled child who is hypoactive. Here is Dr. Montessori's description: "They are ready to renounce their movements and obey every inhibiting command on the part of the adult who finds it very easy to substitute his own will for that of the child. The child docilely giving way in everything. Thus there is a grave danger of the child's falling into apathy, that apathy that is called idleness, and sloth. The adult welcomes such a state of things because it does not impede his own activities but it is really the extreme limit to which deviation can reach."

The characteristics of the psychic deviations of the possessive and power-craving child bear a resemblance to the distractibility of appetite-insatiability described by Dr. Levine. We also have the deviations cited as those of the inferiority complex – the child full of fear and the one who lies all the time.

NORMALIZATION THROUGH WORK

How are we to correct these problems? The one cure for all the deviations, the process of normalization, says Dr. Montessori, is only through work — work that the child has picked on his own, using his own hands, the organs of his mind and will. The child works within his environment to build himself. The more actively the child is engaged with using his hands in manipulation, the more his memory and concentration are involved. "The first spontaneous spell of concentration" is the beginning of his salvation. Since these are all attentional deficits, it stands to reason that the beginning of the ability to attend, to concentrate, is the key that will lead the child to normality. However, before the child is able to concentrate we hope to be sure that his mind and body are working in unison. Those of you who have listened to Dr. Osterkorn's lecture on "Movement, Manipulation and Maturation" and Mrs. Palmieri's lecture on "The Cosmic Plan of Development," understand Dr. Montessori when she tells us that: "To have a vision of the cosmic plan, in which every form of life depends on directed movements which have effects beyond their conscious aim, is to understand the child's work and be able to guide it better."

Movement

Therefore, what we initially aim to do in our Montessori classroom, in the hospital programme, is to educate Movement. We do this by taking the child through all the simple exercises of practical life and by placing a lot of emphasis on the exercises of practical life. By placing a lot of emphasis on the exercises in social relations, the grace and courtesy exercises allow for efficient movements as well as developing harmony of mind and body between the individual child and others. In our position, working with children with developmental disabilities, we cannot leave anything to chance. We try to cover all bases, hypothetical social situations are play-acted and correct social responses are given. The children are carefully shown how to act in given circumstances. We do these activities daily. The walking on the line and silence games are also part of the daily routine for developing complete control of mind and body. Besides these exercises, the other *real* practical life exercises are gone into very thoroughly. The children are always moving, carrying, opening, closing, moving. In this way we see the gradual development of independence, self-control and concentration.

Choice

In Dr. Montessori's doctrine of "Centre and the Periphery" she stresses the fact that in order for concentration to develop the child has to choose the activity himself. The child presents us with two aspects of the individual, the centre and the periphery. The centre is the innermost secret part of the child's mind, the periphery is the part of the child's personality that comes in contact with the outside world. Through the constant interaction of these two factors, the centre and periphery, we can see a gradual development of the child's mind as it grows in concentration making for a unity in the personality of the mind.

Dr. Montessori's didactic materials, beginning with the materials to educate the senses, help the child's natural tendency to explore his environment. These materials, because of their scientific accuracy, careful gradings, and the exceptional manner in which the stimulus is isolated, are a special boon for the child with attention deficits.

The same is true with the senses. Our senses are being constantly bombarded with stimuli. We can control our senses. It is we who choose to look, to see and to act. As active beings we can express if we do not want to see — we close our eyes. When we do not want to hear — we shut our ears. The child also chooses through his senses. In the case of the neurodevelopmentally disabled, this is something that needs to be carefully taught. It is Dr. Montessori's view that the child takes in images through the senses and movement, this is: "accomplished by the manipulation of objects, by a continuous muscular activity."

Therefore, in order to help the child to develop concentration, especially since we let the child free to choose his activities, our role as Montessori directresses is to always "feed the periphery." We do this by preparing an environment ready to meet the natural human tendencies of the child. The child explores the materials we have placed at his disposal. By doing so he explores the world and abstracts his own ideas. These ideas are then built into his own mental system, which is the great work of the centre. This is what we mean by structure in the Montessori prepared environment. The choice of objects and Montessori materials is carefully assessed and placed at the child's disposal by the Montessori teacher. Here again, the children are not only able to look at them but the manipulation of each activity, of each piece of material, is carefully, precisely presented to the child. This is the structure of the environment that is so beneficial for the child with developmental disabilities.

Materials

Dr. Montessori's didactic materials, beginning with the materials to educate the senses, help the child's natural tendency to explore his environment. These materials, because of their scientific accuracy, careful gradings, and the exceptional manner in which the stimulus is isolated, are a special boon for the child with attention deficits. The child with a developmental lag has trouble mastering concepts. What we do in the Montessori classroom is to help the child use the mental processes he has. We are showing these children how to use appropriate strategies for learning on a developmental basis. We do this by not only showing them the materials, but by presenting each piece of equipment, individually if necessary, so that "each material calls forth a visible movement at the periphery," we try "never to give to the eye more than we give to the hand." So we see children who are successful and are capable of learning at their own gentle rates, because once more the mind and hand are united in building up the personality of the child.

An important factor for consideration in our work in the hospital programme is that we have more successes with the children we work with below the age of six. In reviewing the literature on learning and developmental disabilities over the past twenty years, one is impressed by the evidence that points to the fact that early assessment and intervention of learning disabilities is both necessary and possible. Writing in "Current Topics of Learning Disabilities," Karnes and Storeburner say: "It is reasonable then to believe that handicapping conditions such as learning disabilities can be prevented through high quality early intervention, based on an ongoing assessment which delineates the child's strengths and weaknesses, and provides a curriculum and services enabling the child to overcome or minimize weaknesses."

This is the hope that the Montessori method holds out to the developmentally disabled young child.

Note: This lecture was presented at the First International Montessori Forum held in San Juan, Puerto Rico in February, 1984.

REFERENCES

Brutten, Milton, Richardson, Sylvia O., Mangel, Charles. *Something's Wrong with My Child: A Parent's Book about Children with Learning Disabilities.* Harcourt Brace Jovanovich Inc., New York, 1973.

Kinsbourne, M., Caplan, P.J. *Children's Learning and Attention Problems.* Little, Brown & Co., Boston, 1979.

Lerner, J. W. *Children with Learning Disabilities.* (2nd ed.), Boston, Houghton M. Mifflin, 1976.

Levine, M.D., Brooks, R. Shonkoff, J. *A Pediatric Approach to Learning Disorders.* New York, John Wiley & Sons, 1980.

Lillard, Paula Polk. *Montessori — A Modern Approach.* New York, Schocken Books, 1972.

McKinney, James D. and Feagons, Lynne Editors. *Current Topics in Learning Disabilities.* New Jersey, Alex Publishing Corporation, 1983.

Montessori, Maria. *The Absorbent Mind.* India, Kalakshetra Publications (2 ed.), 1959.

Montessori, Maria. *Spontaneous Activity in Education.* New York, Schocken Books, 1965.

Montessori, Maria. *The Secret of Childhood,* Calcutta, Orient Longman Ltd., 1961.

SPECIAL EDUCATION

Montessori, Maria. *The Montessori Elementary Material, The Advanced Montessori Method, Vol. 2.* Massachusetts, Robert Bently Inc., 1964.

Montessori, Maria. *The Formation of Man.* Adyar, India, The Theosophical Society, First Edition. 1955.

Montessori, Maria. *The Discovery of the Child.* Adyar, India. The Theosophical Society, 1962.

Piaget, Jean. *The Construction of Reality in the Child.* (Translated by Margret Cook.) New York, Basic Books Inc., 1954.

Standing, E. M. *Maria Montessori – Her Life and Work.* New York, Hollic & Carter Limited, 1957.

Wadsworth, Barry J. *Piaget's Theory of Cognitive Development.* New York and London, Longman Inc., 1971.

Wiig, Elisabeth Hemmersan and Semel, Eleanor Messing. *Language Assessment and Intervention for the Learning Disabled.* Columbus, Ohio, Charles E. Merrill, 1980.

JOURNALS AND PUBLICATIONS

Brown, George W., M.D. "Developmental and Behavioral Pediatrics: A Realistic Challenge?" *Developmental & Behavioral Pediatrics,* Vol. No. 1, March 1980, pp. 3-9.

Casey, Patric H., M.D. and Bradley, Robert H., Ph.D. "The Impact of the Home Environment on Children's Development: Clinical relevance for the Pediatrician." *Developmental and Behavioral Pediatrics,* Vol. 3, No. 3, September 1982.

Cruickshank, William M. "Straight is the Bamboo Tree." *Journal of Learning Disabilities,* Vol. 16, No. 4, April 1983, pp. 191-197.

Gottlieb, Marvin J., M.D., Ph.D., Zinkus, Peter W., Ph.D. "Hyperactivity: Still a Maze of Questions" — Guest Editorial. *Developmental and Behavioral Problems,* Vol. 1, No. 3, Sept. 1980, p. 99.

Kinsbourne, Marcel, M.D., Ph.D. "Diagnosis and Treatment of School Problems." *Pediatrics,* Vol. 52, No. 5, November 1973, p. 697.

Leviton, Alan., M.D. "Otitis Media and Learning Disorders." *Developmental and Behavioral Pediatrics,* Vol. 1, No. 2, June 1980, p. 58.

Long, Richard L., Ph.D. and Murray, Michael E., Ph.D. "Review Neuro-Physiologic Aspects of Developmental Dyslexia." *Developmental & Behavioral Pediatrics,* Vol. 3, No. 1, March 1982, p. 2.

Murray, Michael E. "Behavioral Management of the Hyperactive Child" *Developmental & Behavioral Pediatrics,* Vol. No. 3, Sept. 1980.

Osterkorn, Jon. R., Ph.D. "Movement, Manipulation and Mental Development," *A.M.I. Communications,* Reprint of A.M.I. Study Conference — August 1982 — Held at Noordwijkerhout, The Netherlands.

Shaw, Lisa M.A., Levine, Melvin D., M.D., Belfor, Myron, M.D. "Developmental Double Jeopardy: A Study of Clumsiness and Self-Esteem in Children with Learning Problems." *Developmental & Behavioral Pediatrics,* Vol. 3, No. 4, Dec. 1982, p. 191.

Thompson, Robert J. Jr., Ph.D. "Multidimensional Problems and Findings in Developmentally Disabled Children." *Developmental & Behavioral Pediatrics,* Vol. 3, No. 3, Sept. 1982, p. 153.

Torgesen, Joseph K., Ph.D. "Conceptual and Educational Implications of the Use of Efficient Task Strategies by Learning Disabled Children." *Journal of Learning Disabilities,* Vol. 13, No. 7, August/September 1980.

Wolraich, Mark L., M.D. "Pediatric Practioner's Knowledge of Developmental Disabilities." *Developmental and Behavioral Pediatrics,* Vol. 1, No. 4, Dec. 1980.

INTRODUCTION

STARTING A SCHOOL

DEVELOPING A PROPOSAL

COMMON MISCONCEPTIONS

MAGNET SCHOOL FUNDING

TASK FORCE DEVELOPMENT

School districts need clearly laid out development plans for Montessori implementation. This is very important for Montessori school advocates who must counter any misconceptions about Montessori pedagogy circulating within the educational establishment. Included are cost audits from two well established Montessori schools in Cincinnati, which demonstrate high achievement and with pupil costs comparable to public school costs. Many times start-up costs are covered by magnet school funds for the one-time cost of Montessori materials.

STARTING A SCHOOL

DEVELOPING A PROPOSAL

Research has found that approximately two-thirds of existing Montessori public school programs have been initiated by school districts as voluntary efforts at desegregation of racially or economically imbalanced districts or as responses to educational reform movements. The remaining one-third were founded by Montessori teachers and parents who sought public funding for their efforts. Whatever the genesis, it is important that the initiators of Montessori programs in public schools be informed about a number of key issues before they undertake this responsibility.

PROPOSALS AND FIRST STEPS

When developing a proposal for the public school district the following issues should be considered:

Needs Statement

Emphasize current concerns of the district — early childhood education, desegregation, explicit achievement, and individualized instruction — to assert the needs of the district. A needs statement should consist of several paragraphs indicating the challenge Montessori programming will face, as well as information regarding the ways in which such programming will be of benefit to the district.

Program Summary

The program summary should respond to the needs statement, indicating the solutions implicit in Montessori programming. Each district has its own trends and surrounding conditions for curriculum innovation. A discussion with district curriculum supervisors will allow the program description to speak to regional curriculum issues. Also, a personal visit with the superintendent to promote the comprehensive nature of the curriculum may secure the high level support needed for the program's unique requirement for total implementation.

Parent Involvement

A traditional approach to starting schools in the private sector is to hold monthly "study groups." These groups discuss Montessori philosophy of education and are usually led by an informed parent or Montessori professional. Suggested books by Montessori for these discussions include the *Secret of Childhood*, *The Absorbent Mind*, and *The Child and the Family*.

In the early stages, parents may form a not-for-profit "Friends of the Montessori School." This parent not-for-profit group is often willing to raise funds for special capital items for the school, to plot out a course for school expansion with the intention of raising money, and helping the building principal achieve community support for various plans.

A "task force" committee made up of parents, teachers, and the administration of a new school is often recommended by the court in desegregation cases to guarantee timely completion of the school planning (see Appendix 4).

STARTING A SCHOOL

Initial Publicity — Program Descriptions

Initial publicity should illustrate the unfolding reality of the school, including the mission of the program, parent involvement, the needs to be met by establishing a Montessori school, the location of the school, and the timetable for school development and related meetings.

Staffing

Staffing is the most critical part of starting a Montessori school. If a school begins with a small staff developing a year at a time, teachers may be sponsored for training programs. Ideally, preparation of teachers should commence two summers prior to the school opening date so that training is completed prior to the opening. Sponsorship contracts encourage staff retention by an agreement to stay with the program.

In many cases, a school which is designated to become a Montessori school may require that the current faculty in that building either choose Montessori training and practice or transfer from the building after a predetermined period of time. However, it is important not to force training on faculty. Interested faculty should train first. As they practice their expertise and receive their Montessori apparatus, other faculty will develop interest and may decide to enroll in the next course. It is ideal to aim for the total conversion of a building over a period of four to six years.

Facilities

Projections regarding enrollment require choosing a facility. Usually a discrete building wing or annex works best to lend a sense of identity to the program. Many times in the first stages, the Montessori programs are "schools within a school." This provides the new Montessori program with an established building and many related resources, as well as an experienced building principal. "The school within the school" will then relocate to an autonomous Montessori site when numbers reach maturity (see Relocation, Chapter Ten).

Another approach is to establish a "progressive" Montessori program which gradually displaces the traditional portion of the school. This particular method of starting requires very experienced administration to modulate the tensions between expanding Montessori and diminishing non-Montessori staff (see Implementation, Chapter Four).

The least complicated approach is to begin a program in an autonomous building, but such conditions may not be feasible relative to projected enrollment or space availability.

Facility requirements are also included in Chapter Ten: Expansion, and should include funds allocation so that the building can be brought up to specifications.

Enrollment Projections

Anticipated numbers by grade should be projected for five years. This will permit space and material allocations to be budgeted in accordance with the number of children being served. Staffing needs and multi-age classroom groupings should also be projected accordingly.

Montessori Inventory Per Classroom

Montessori materials should be purchased for those teachers who have Montessori training and know how to use them. Careful inventory must be maintained from the beginning with each classroom teacher responsible for his or her own set of Montessori apparatus. Materials shared from class to class tend not to receive the same degree of quality maintenance as those materials in the custody of individual teachers.

Evaluation and University Partnership

The terms of evaluation of the Montessori program should be negotiated in advance. Most programs require some testing mechanism; Montessori schools perform very well on annual standardized achievement tests. However, competency-based testing with a specific set of timed skills should be avoided as this type of test tends to prescribe curriculum other than Montessori. At least one-third of the existing public school Montessori programs have received exemptions from competency-based testing.

University involvement in pre-testing and post-testing research projects utilizing various instruments and interview formats can ease district concerns regarding accountability (see Evaluation, Chapter Eleven).

Program Audits

Various "audits" from programs in established districts indicate that Montessori program-per-student costs equalize once the up-front equipment purchases are made. Many districts write magnet school grants to cover their equipment start-up needs. Other statistics in audits show excellent desegregation results as well as academic achievement (see Evaluation, Chapter Eleven).

STARTING A SCHOOL

COMMON MISCONCEPTIONS SCHOOL DISTRICTS HAVE ABOUT MONTESSORI EDUCATION

Montessori is rigid and does not permit integration of the district curriculum.

Montessori curriculum is a comprehensive program in its own right. The inclusion of other curricula impact on its interdisciplinary structure, its intricate system of indirect preparation, and the clarity of educational goals in both the mind of the teacher and the child. It is not that Montessori is rigid; rather Montessori is both self-assured and self-sufficient in its curriculum pathways. Montessori curriculum goals and objectives can be outlined along with district curriculum goals and objectives to demonstrate correspondence.

Montessori is elite because it demands special materials and special teachers.

Montessori schools require special teachers and special equipment as does any magnet concept. A computer school needs computers and computer literate instructors. It should not be surprising that a Montessori school needs special apparatus and training. Magnet schools by definition offer a unique delivery system which must be supported with both the right kind of staff and equipment.

Montessori is too expensive. Both training costs and material costs are prohibitive.

Materials are expensive, but when comparing costs of textbooks and workbooks with Montessori materials there is an equalizing of costs over time. Montessori materials, if cared for, can last ten to fifteen years or longer. Montessori training is not more expensive per trainee than Child Development Associates, Headstart training or a conventional Master's program at a private university. Once established, Montessori costs per pupil are generally less than conventional schools.

Full Montessori implementation is too expensive. We will have a Montessori enriched program with partial training and partial equipment.

Montessori works because it is a curriculum spiral with an internally consistent view of the child. Piecemeal programs beget piecemeal effects. When a district chooses a comprehensive approach such as Montessori, it is dealing with many levels: the preparation of teachers, the content of the learning materials, testing methods, and evaluation technique. Failure to establish planned priorities for the whole curriculum system may leave the students worse off than before Montessori programming was adopted.

Montessori is for gifted children and does not serve children from lower socioeconomic levels.

Frequently this is said about Montessori because it has been maintained in upper class situations in the private sector which may project an image of eliteness and giftedness. However, Montessori began her work with normal children specifically to meet the needs of a group of lower income children in a housing estate in Italy. In the view of Montessori, every child is uniquely endowed. Utilizing individualized learning, isolation of the difficulty, manipulative materials, and a strong emphasis on connection between language and experience, every child can be helped in a Montessori school. Research has vindicated this matter repeatedly (see "Research and Evaluation of Montessori Programs," Chapter Eleven).

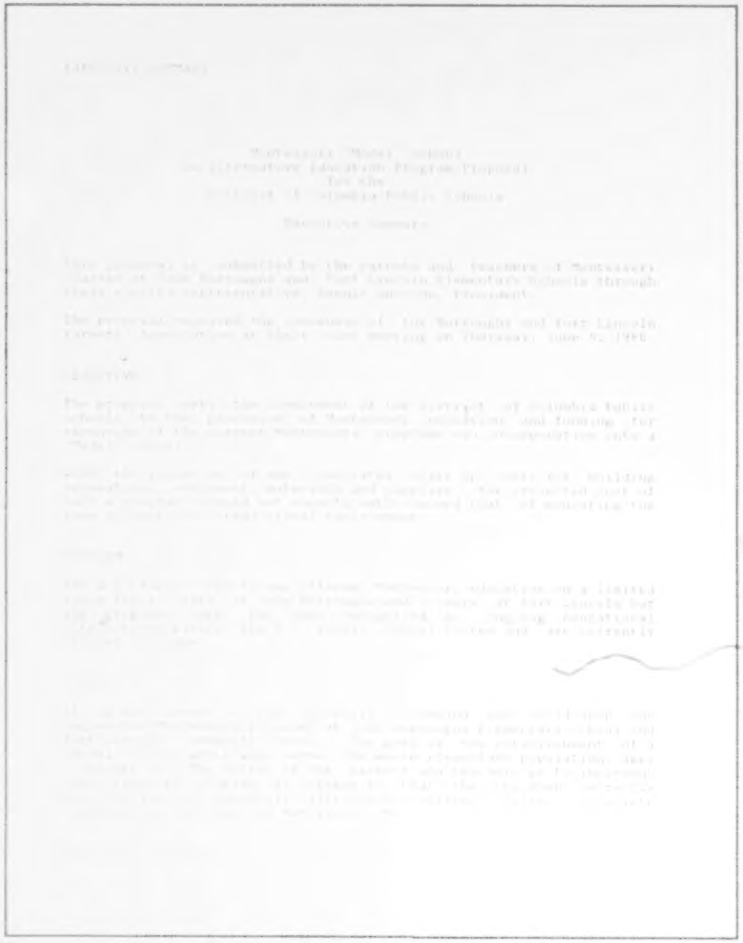
Montessori teacher training and pedagogy is narrow. Montessori programming should take into consideration other pedagogies and techniques that work with the children.

STARTING A SCHOOL

Montessori teachers are confident that their pedagogy will work. The cohesiveness and interlocking nature of the curriculum parts need to remain uncluttered by the infusion of commerical sources of textbooks, teacher manuals, workbooks, etc. Many times Montessori teachers who are trained to prioritize Montessori programming in order to establish a coherent and well defined developmental approach to the whole child, will avoid the fragmentation and confusion of random supplementary sources.

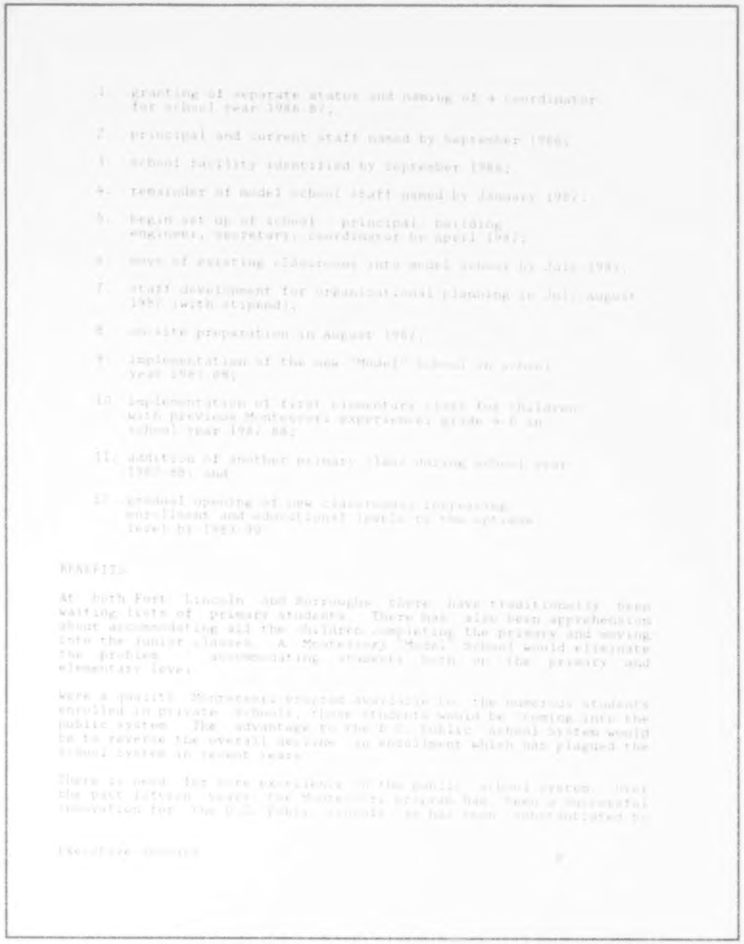
Appendix 1: An Alternative Education Program Proposal to the District of Columbia Public Schools

This first chapter of the proposal offers a helpful timeline and an articulate statement of purpose and design. Also included is an "executive summary," which provides a quick synopsis of the contents of the proposal. (This may be ordered from the Montessori Public School Consortium, 2859 Scarborough Rd., Cleveland Hts., OH 44118.)



Montessori "Model" School
An Alternative Education Program Proposal
for the
District of Columbia Public Schools

Executive Summary



1. granting of separate status and naming of a coordinator for school year 1986-87;
2. principal and current staff named by September 1986;
3. school facility identified by September 1986;
4. remainder of model school staff named by January 1987;
5. begin set up of school - principal, building engineer, secretary, coordinator by April 1987;
6. move of existing classrooms into model school by July 1987;
7. staff development for organizational planning in July-August 1987 (with stipend);
8. on-site preparation in August 1987;
9. implementation of the new "Model" School in school year 1987-88;
10. implementation of first elementary class for children with previous Montessori experience, grade 4-6 in school year 1987-88;
11. addition of another primary class during school year 1987-88; and
12. gradual opening of new classrooms, increasing enrollment and educational levels to the optimum level by 1988-89.

BENEFITS

At both Fort Lincoln and Burroughs there have traditionally been waiting lists of primary students. There has also been apprehension about accommodating all the children completing the primary and moving into the junior classes. A Montessori "Model" School would eliminate the problem of accommodating students both on the primary and elementary level.

Were a quality Montessori program available to the numerous students enrolled in private schools, these students would be coming into the public system. The advantage to the D.C. Public School System would be to reverse the overall decline in enrollment which has plagued the school system in recent years.

There is need for more excellence in the public school system. Over the past fifteen years the Montessori program has been a successful innovation for the D.C. Public Schools as has been substantiated by

Executive Summary

its growth, test scores and the overall success of the students enrolled in the program. The development of a "Model" School would only serve to enhance the reputation of the school system.

RECOMMENDATIONS

The following items represent the overall recommendations of this proposal:

1. Establishment of Montessori "Model" School
2. "Model" preferably to remain in Region 2, at least in Ward 5
3. "Model" open to all D.C. Residents
4. Core student population built from existing Montessori Programs at Burroughs and Fort Lincoln
5. "Model" expanded to include ages 9-12 allowing those Montessori students who have moved to traditional program to return if so desired
6. Only AMI Certified Teachers hired for the Montessori "Model" School
7. Instructional aides in the "Model" School paid for under D.C.P.S. budget
8. "Model" School to include a Day Care Facility, accommodating before and after care of students
9. AMI training paid by D.C.P.S. for those teachers who are currently certified by D.C.P.S.
10. The AMI certificate be equivalent to 30 graduate credits as is the rule in other public schools implementing Montessori programs
11. Development of a reporting structure (report card) that reflects Montessori and system-wide progress.

FUNDING

It is anticipated that the cost of funding this proposal would not exceed the costs associated with the operation of any other elementary school. However, the initial project would cost D.C.P.S. funds in terms of any associated renovation and classroom set up costs, hiring of a coordinator and at least two new teachers, hiring of 8 classroom aides (currently paid by the Parent Group), etc.

The renovation cost is highly dependent on the condition of the facility that is selected for the site of the Montessori "Model" School. The better the facility the fewer renovations needed. We would suggest that the site to consider would be a school that is under-utilized rather than one that is vacant and also a school that was previously designed to accommodate access by smaller children rather than older ones. Keeping in mind these two aspects alone would necessitate fewer costs for renovations and repairs from the onset.

Another factor in keeping renovation costs low would be to consider converting the current locations of Fort Lincoln or Burroughs into the Montessori "Model" School. If either of these two schools were selected as the facility, renovation costs would be negligible.

In terms of classroom set up, the initial phase calls for 4 primary classrooms, 2 junior classrooms and 1 elementary classroom. We currently have equipped at Burroughs and Fort Lincoln, 3 primary and 2 junior classrooms, which would be moved intact to the Montessori "Model" School. Therefore, the major costs of classroom set up for the first year would be to supply the one additional primary class and the one elementary class with Montessori materials, tables, chairs, shelving, etc.

The details of the proposed budget for this Montessori "Model" School were being evaluated by the Budget Office of the D.C. Public Schools at the time of this proposal's publication. Therefore, the projected budget will be presented as an addendum to this proposal upon completion by the D.C.P.S. Budget Office.

DISTRICT OF COLUMBIA PUBLIC SCHOOLS
MONTESSORI "MODEL" SCHOOL
IMPLEMENTATION TIME TABLE

I. STATEMENT OF GOAL

* To provide Montessori education and funding for the expansion of the current Montessori programs via incorporation into a Montessori "Model" School.

OBJECTIVE(S)	TASKS	1986				1987								MILESTONE INDICATOR
		SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	
To implement the Montessori "Model" School	Receive written approval from the Board of Education to implement school	***												
	Principal and "Core" staff identified	***	***											
	Remainder of "Model" School staff identified and assigned	***	***	***	***	***								
	Identify Building	***	***	***	***	***								
	Students identified and notified of opening and location of "Model" School					***	***							
	Advertisement of school thru media for new and transfer student enrollment								***	***				
To prepare building for occupancy	Begin set up of school by Principal, coordinator, secretary, engineer					***	***	***	***	***	***	***	***	
	Move of existing classes into "Model" School										***	***		
To plan and organize, making ready for student occupancy	Staff development for organizational planning											***	***	
	On-site preparation of school & classrooms												***	
	School ready for doors to open to students												***	

SECTION I - PURPOSE AND INTRODUCTION

A. PURPOSE

The proposal seeks the commitment of the District of Columbia Public Schools to the provision of Montessori education and funding for expansion of the current Montessori programs via incorporation into a model school.

B. SCOPE OF THE PROPOSAL

This proposal suggests a phased development of the Montessori "Model" School:

September 1986	Continuation of the existing Montessori classes in their current locations, under the direction of a single Montessori Coordinator (described in a later section of this proposal) Building, principal and core staff identified for the initial phase of the school

January 1987	Start of any necessary building renovations
	Staff selected for first "new" classrooms: 1 intermediate (9-12 years old) 1 primary (3-5 years old)
	Remainder of administrative staff identified
April 1987	Set up of new classrooms for School Year 87-88 by principal, coordinator, engineer, secretary
June 1987	Moving and set up of existing classrooms
July-August 1987	Staff development and planning
September 1987	Opening of the "start-up" model school, housing: 4 primary classrooms 100 to 120 children (ages 3 to 6) 2 junior classrooms 50 to 60 children (ages 6 to 9) 1 elementary classroom 20 to 30 children (ages 9 to 12)

Once established the "Model" School would add classrooms and facilities on a gradual basis up to a proposed "full school" of four

primary classes, ages 3 to 6, four junior classes, ages 6 to 9 and four elementary classes, ages 9 to 12 by school year 1993-94. The final "Model" school would serve 300 to 360 students and would include all the amenities of a traditional school, i.e. library, p.e., art, music, counselling, etc. meshing in the most appropriate fashion with the Montessori approach. The facilities and staff for the program are described in detail later in this proposal.

C. STATEMENT OF THE PROBLEM

This proposal attempts to address a two-fold problem.

First, while the current program has been extremely successful, it has no structure or status within the District of Columbia School System. Unlike other programs such as gifted and talented, special education, Banneker Academic High School, etc., the Montessori program has not been recognized as an ongoing educational alternative. Because the program has a different method and approach, it requires different guidelines and analysis as set forth by the Association Montessori Internationale (AMI); yet it is not incompatible with public school instructional programs. In cities such as Milwaukee, Wisconsin; Buffalo, New York; Dallas, Texas; Cincinnati, Ohio; and Spokane, Washington, Montessori public school programs are thriving. Some of these programs were initially patterned after the Burroughs' program. Their difference lies in the extent to which they are recognized, respected, and supported by their public school system.

The second part of the problem involves the limits of the current program. Many parents who are desirous of a Montessori education are concerned about their children's education beyond the third grade. The Montessori curriculum for the 9-12 year old continues to build on the firm foundation established in the primary and junior classes. The logical expansion of a true alternative educational program is addition of the elementary level. While a consistent quality of elementary instruction has been available in the traditional Burroughs' program, many parents opt to transfer their children after third grade to either private Montessori schools, private traditional schools with strong academic programs or to other public schools known for their high academic standards. The development of a "Model" School, serving students through 6th grade would lessen this problem and offer students an alternative educational opportunity.

D. HISTORY OF THE MONTESSORI PROGRAM IN THE D.C. PUBLIC SCHOOLS

The Montessori Program has been operational in the D.C. Public Schools

since September 1971. The program began at the John Burroughs Elementary School, the second school system in the nation to have such a program. (The first were Drew School in Arlington, Virginia and Benjamin Franklin School in Philadelphia, Pennsylvania). The program was originally funded as an experimental program using Title III funding under the Elementary and Secondary Education Act. After its first year of operation the Burroughs Program was awarded the Gold Medallion for Excellence in Programming by the D.C. Public Schools and became the "model" pre-school for the entire District of Columbia.

The current program was designed and adapted over its history to meet several needs:

1. need for quality pre-school education in ward 5;

2. need to make the opportunity for Montessori education available to those who could not afford it privately; and a

3. need to continue to consistently educate the primary "graduates" as they continue to the junior level.

Since 1974 the Montessori program has been funded through the regular public school budget. The program also receives additional funding in fees collected from the Parents' Group. These fees pay for expenses not included in the public school budget, such as classroom aides salaries, specialized Montessori materials, etc.

In 1975 after four years of meeting Association Montessori Internationale (AMI) guidelines, the Burroughs Montessori Program became the first public school in the nation to obtain AMI certification.

Initially, the program began at Burroughs with one primary class. Then, in 1973 a transitional class (grades K-1) was added to accommodate students from the primary class. In 1974 the program was expanded to include another primary class. In 1980 the program grew to include one primary class at Fort Lincoln and two elementary classes (grades 1-3) at Burroughs. The program currently has three (3) primary classes (two located in John Burroughs and one located in Fort Lincoln) and two elementary classes located at John Burroughs.

The program has demonstrated a high quality of success in teaching and learning as can be substantiated by its growth, test scores, monitoring team evaluations and the overall success of students who began their education in this program. In addition, the program has been used repeatedly by the Washington Montessori Institute as one of the training sites for its future teachers. Aside from its success in terms of test scores and evaluation, the children have proven through exposure to the Montessori approach their success in preparation for life, independent thinking, enjoyment of learning, etc.

Currently the program, housed within a traditional school environment, is serving 78 three, four and five year olds in three primary classrooms in morning sessions. Depending on the skill level of the individual child, the four and five year olds are invited to participate in an afternoon session of more intense instruction. These afternoon sessions serve 20-30 children. There are two junior classrooms, ages 6 through 9, that serve an additional 45 children in all day sessions. From time to time, specialists have been available to the children and teachers in the areas of art, music, Spanish, and swimming. The art program, conducted by the parents, has been so successful that the traditional school requested to participate in its classes.

The current program has outstanding community support and involvement. The Montessori Parents' Association was begun in 1971 and incorporated under D.C. Law in 1980 as a non-profit corporation. The Association was responsible for creating the community advocacy necessary to the development of the program and continues to be actively involved with many of its facets and its future.

E. NEED FOR NEW PROGRAM

At both Fort Lincoln and Burroughs there have traditionally been waiting lists of primary students. Each year, there has also been apprehension about accommodating all the children completing primary and moving into the junior classes. This has been a special source of frustration for Fort Lincoln parents who have had no assurance that their primary children would find space in the Burroughs junior classes.

The cost of Montessori education in private schools has continued to escalate. Tuitions ranging from $1,000 to $3,000 are the norm. These costs are prohibitive for many District of Columbia residents. Were a quality Montessori program available to all those parents in the District of Columbia who wanted it, many of those children now enrolled in private schools would be coming into the public system. This phenomenon has been repeated over and over where Montessori has been utilized (Milwaukee, Dallas, Cincinnati, etc.). One advantage to the D.C. Public School System would be to reverse the overall decline in enrollment which has plagued the School System in recent years.

The Montessori Program has been a truly successful innovation for the D.C. Public Schools. Its excellence serves to enhance the reputation of the system. There is, as in any school system, a need for more excellence. The Montessori "Model" School would be a gigantic step towards continuing this enhancement of the reputation of the D.C. Public School System.

The development of a Montessori "Model" School is also needed to alleviate or reduce existing problems which are caused by the lack of recognized structure and the limited scope of the existing programs.

1. Stability and Permanence of the Program

   Parents who presently have their children enrolled in the program have no assurance from year to year that the program will continue uninterrupted. Parents need to know that the program will continue regardless of changes in teacher personnel and/or administration.

2. Reporting

   The Montessori program utilizes a different approach to accomplish the same objectives as outlined by the Competency Based Curriculum (CBC). However, the specific skills are often defined differently or occur on a different timetable. Since current report cards are based on the CBC skills checklist, they are not a genuine reflection of the child's potential, strengths or weaknesses. The parents and teachers need a reporting system that accurately measures the child's progress, along with a special checklist relating that progress to the CBC guidelines. It is also extremely important for the child leaving the program to carry with them a document that contains data necessary for proper placement in their new environment.

3. Assurance of AMI Certified Teachers

   Only teachers with Association Montessori Internationale (AMI) certification should be hired to teach Montessori classes. AMI certified teachers who are not certified by D.C.P.S. should be allowed 5 years to complete certification requirements. (This is in compliance with existing regulations.) Any teacher hired under such circumstances would then be assured of being rehired each year until probationary status is acquired, provided he/she meets the teaching standards of the D.C.P.S., the Montessori Program and obtains a satisfactory performance appraisal. Further, and most importantly, the parents would be guaranteed an adequate number of Montessori teachers for the program on a 25:1 basis which is consistent with D.C.P.S. policy.

4. Limitation of Junior/Elementary Program

Currently the environment does not allow full implementation of the Montessori approach. Additional time should be allowed to address the "going out" phase of the Montessori approach. "Going out" is defined as learning "outside of the classroom", exploration of society, how it is made, how it functions and what is its purpose. The child's work inside and outside of the classroom must be complementary. Neither is complete by itself. It is this two fold operation that is missing from the current program and it is one of great difference of the environment, of the material, of the work of the child and the work of the teacher. Only if we implement this "going out" will the child of the Junior Class really profit from the operation of their psychological characteristics.

5. Incorporation of CBC

In the Montessori program as it currently exists there is no time to compare and incorporate the CBC into the Montessori curriculum. An overview of the CBC indicates that the skills can be incorporated into the Montessori method and curriculum. Testing should be done once per year, rather than frequently during the school year to allow for the individual child's absorption of the concepts and to allow for the differences in teaching approach between Montessori and traditional. The program/school should recognize that the end result demonstrated by the child's performance and learning is the important factor, not in this case, how one gets to that end.

E.THE MONTESSORI ALTERNATIVE

The basic idea in the Montessori philosophy of education is that every child carries unseen, within, the person he or she will become. In order to develop their physical, intellectual and spiritual powers to the fullest, they must have freedom - a freedom to be achieved through order and self-discipline. The world of young children is full of sights and sounds which at first appear chaotic. From this chaos, they must gradually create order, and learn to distinguish among the impressions that assail their senses, slowly but surely gaining mastery of themselves and their environment.

Dr. Maria Montessori developed what she called the "prepared environment" which already possesses a certain order and disposes children to develop at their own speed, according to their own capacities, and in a non-competitive atmosphere in their first school years. "Never let a child risk failure, until he has a reasonable chance of success," said Dr. Montessori, understanding the necessity for the acquisition of a basic skill before its use in a competitive learning situation. The years between three and six are the years that children most easily learn the ground rules of human behavior. These years can be constructively devoted to "civilizing" the children -- freeing them through the acquisition of good manners and habits, to take their place in their culture.

Children who have had the benefit of a Montessori environment are freer at a later age to devote themselves more exclusively to the development of their intellectual faculties. The method by which children are taught in the Montessori school might well be called "programmed learning." The structure of Montessori learning involves the use of many didactic materials with which the children may work individually. In every phase of this learning, the teaching material is designed to test understanding, to

correct errors and to prepare children for the next step.

Dr. Montessori recognized that the only valid impulse to learning is the self-motivation of the child. Children move themselves toward learning. The teacher prepares the environment, programs the activity, functions as the reference person and exemplar, offers the children stimulations; but it is the children who learn, who are motivated through the work itself (not solely by the teacher's personality) to persist in their chosen task. If Montessori children are free to learn, it is because they have acquired from their exposure to both physical and mental order, an "inner discipline." This is the core of Dr. Montessori's educational philosophy. Patterns of concentration, stick-to-itiveness, and thoroughness established in early childhood, produce a confident and competent learner in later years. Schools have existed historically to teach children to observe, to think, to judge. Montessori introduces children to the joy of learning at an early age and provides a framework in which intellectual and social discipline go hand in hand.

It is impossible to make a case for any type of alternative education program without some mention of test scores. The following graphs indicate that Montessori students tend to perform at least as well as, and usually better than, those of the larger population.

The evidence of test score achievement through the implementation of a quality Montessori program is all the more remarkable in light of the difference in thrust between the Montessori and traditional methods. The Montessori elementary curriculum requires that subject areas be integrated rather than isolated; that skills be mastered in the process of application to a task rather than taught as goals in and of themselves. Yet tests often measure simple skill mastery only. In the Montessori classroom, the impetus and motivation to a task well done, a question thoroughly researched, or a problem carefully thought through comes ideally from within the child, rather than from a desire for external rewards or praise or from a desire to compete with fellow students. The overall curricular goal is the growth and development of the whole child's competence to become a mature and responsible adult. The children, thus, do not study "for the test" or seek to gain the "A" but learn for the sake of learning.

Here in the D.C. Public Schools the number of students in the Montessori Elementary program taking standardized tests (such as the CTBS at the grade 3 level) is very small (9 students in SY 83-84, 7 students in SY 84-85). Also, the elementary program has only been implemented up to the third grade level since SY 83-84. Nevertheless, when CTBS scores for SY 83-84 and SY 84-85 are compared to those city-wide, a significantly positive difference is shown. (Figures 1 and 2)

Likewise, on criterion referenced tests such as the CBA in Science or Language Arts, a favorable comparison can be made, both

city-wide and building wide. (Figures 3 and 4) It is only because more city-wide test data was not available for this proposal that more comparisons are not made here (such as scores on CBA, CTB or DPI tests for other years and subject areas).

Since the local sampling is small and limited, it would be valuable to examine a sampling from a significantly larger population. The city of Milwaukee, Wisconsin is known for its "Magnet School" system. At present, two of its elementary schools utilize the Montessori method. The following test score data was provided by the Milwaukee Public Schools Department of Educational Research and Program Assessment. Using 13 serially selected schools (to protect the anonymity of the individual schools those sampled have been assigned a number code with #1 being the MacDowell Montessori School. The selection was done by personnel in Milwaukee for SY 83-84. We asked only that one of the schools be the MacDowell School) a comparison was made as follows:

- Percentage of students scoring in the "High Performance" category in vocabulary, reading and math (77 through 99th percentile)

- Percentage of students scoring in the "Average Performance" category in vocabulary, reading and math (23rd through 76th percentile)

- Percentage of students scoring in the "Low Performance" category in vocabulary, reading and math (1st through 22nd percentile).

Figures , and show the comparison of students in Grade 2 in all categories and in all subject areas. Figures 8, 9 and 10 show the comparisons for Grade 5. (The Iowa Test of Basic Skills is administered in Milwaukee on these grade levels rather than the Comprehensive Test of Basic Skills given in Grades 3 and 6 here in the District of Columbia.) The focus of this study will be on the school with the Code Number 1, the Edward MacDowell School, which implements the Montessori program from Pre-school through Grade 6 (population [illegible] students).

Figure shows the percentage of students in Grade 2 who scored in the category of "High Performance". In all areas tested, School #1 shows percentages significantly higher than the national norm (23%), the city-wide norm and the other schools shown.

Figure compares students in the "Average Performance" category. School #1 has a lower percentage of students than city-wide or national norms (54%).

Figure compares students in "Low Performance" categories. It is perhaps here that the findings are most significant. For school #1 a mere 2 percent of students in math scored in this category, compared to 22 percent nationally, and 35 percent city wide. Only 1 percent scored here in reading and no students scored below average in the

area of vocabulary.

Figures 7, 8 and 9 show equally significant findings on the Grade 5 level.

It must be pointed out that an analysis of any body of statistics is subject to a variety of interpretations, particularly those with the limitations and variables of standardized achievement test scores. We must, therefore, exercise caution in drawing sweeping conclusions from test results.

COMPARISON of CTBS TEST SCORES: SY '84 and '85
(Scores for Total Battery : Grade 3)

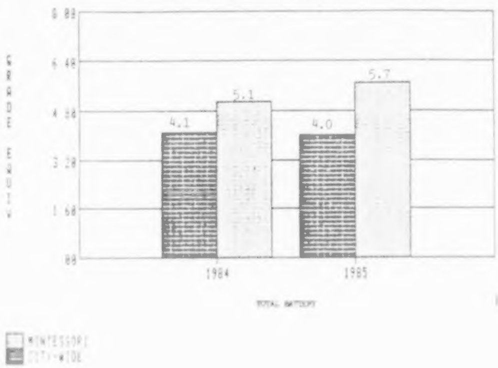


Fig. 1

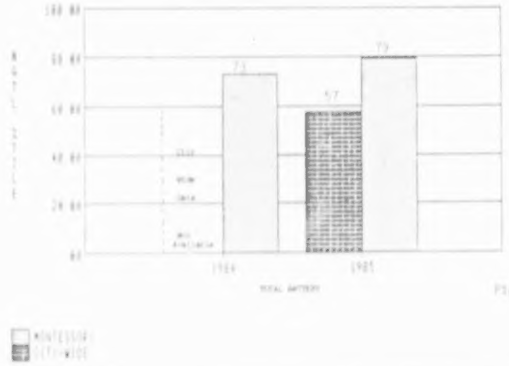


Fig. 2

CBA SCIENCE & LANG. ARTS TEST SUMMARY/COMPARISON
January, 1983

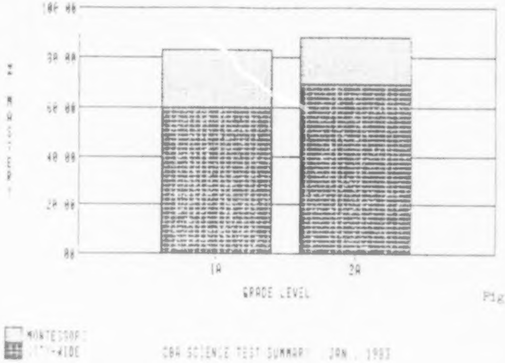


Fig. 3

CBA SCIENCE TEST SUMMARY JAN., 1983

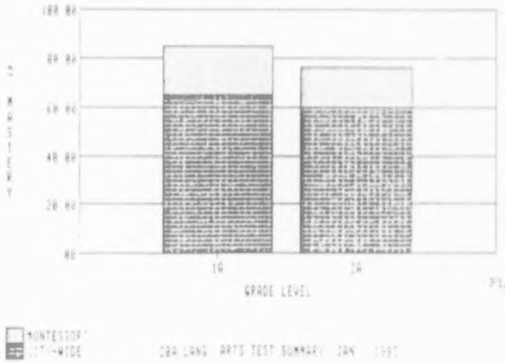


Fig. 3a

CBA LANG. ARTS TEST SUMMARY JAN., 1983

CBC SCIENCE & LANG. ARTS TEST SUMMARY/COMPARISON
John Burroughs School: Feb., 1984

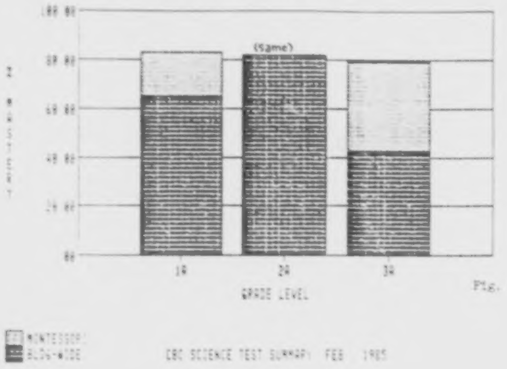


Fig. 4

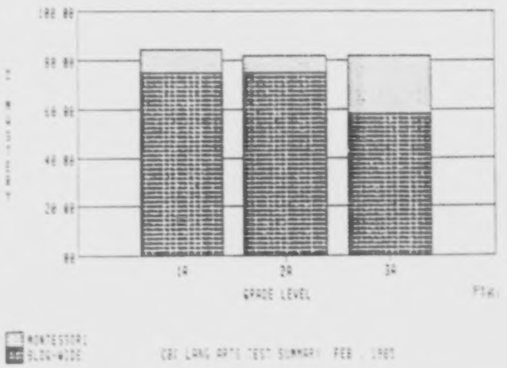
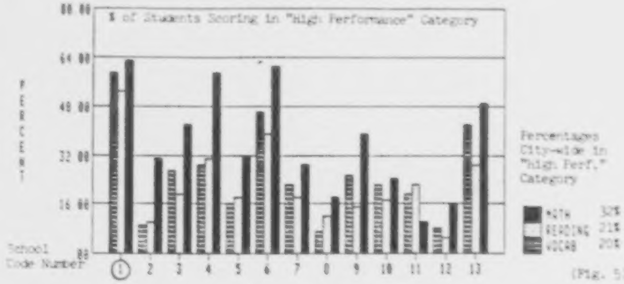
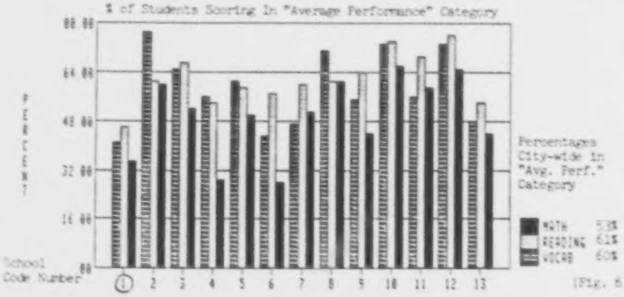


Fig. 4A

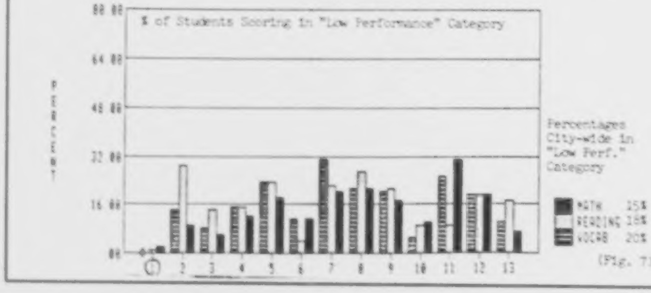
I.T.B.S. MILWAUKEE PUBLIC SCHOOLS, SY 1983-84: GRADE 2



(Fig. 5)

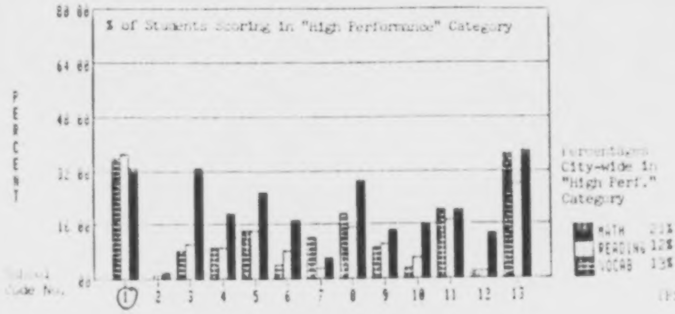


(Fig. 6)

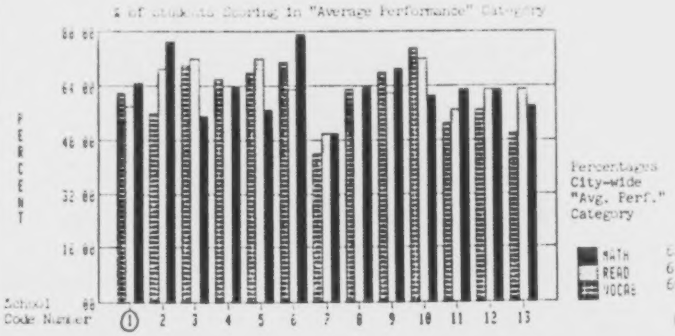


(Fig. 7)

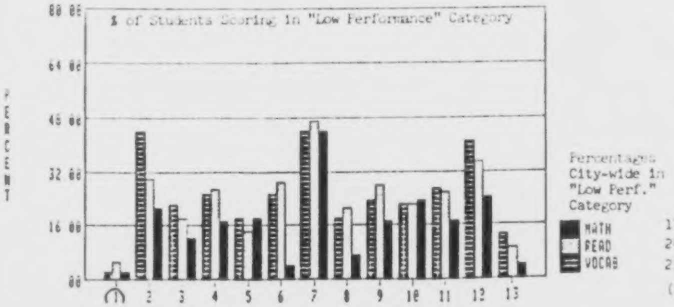
I.T.B.S. MILWAUKEE PUBLIC SCHOOLS, SY 1983-84: GRADE 5



(Fig. 8)



(Fig. 9)



(Fig.10)

Appendix 2: Proposal Summary "Montessori Public School Implementation Planning: Special Report, 1988," a publication of the *Montessori Public School Consortium*.

PROGRAM

Program Description For Proposal Summaries

When writing Montessori program proposals, concise program descriptions are needed by the grantee. The following may be used or modified for proposal writing purposes:

Introduction

Montessori's philosophy of education is based on

"the personality, a harmonious growth of all potentialities of the child, mental and physical, according to the laws of its being..." (Montessori, 1964).

Montessori stated that children have natural tendencies toward learning, that stages of learning exist for which there should be corresponding educational environments and trained teachers who "prepare the environment." The child learns independently using the components of the environment; the teacher coaches and observes the child who chooses his/her activities. The teacher is the link between the child and the environment.

The learning environment cultivates individualization, freedom of choice, concentration, independence, problem solving abilities, social interaction, interdisciplinary breadth, and competency in basic skills.

The Montessori Preschool Environment (Ages 3-6+)

The Montessori classroom is a "living room" for children. Children choose their materials from open shelves with self-correcting materials and work in discrete work areas. Over a period of time the children develop into a "normalized community" working with high concentration and few interruptions. The program includes the following components:

1. The **practical life** exercises enhance the development of task organization and cognitive order through care of self, care of the environment, exercises of grace and courtesy and refinement of physical movement.
2. The **sensorial** materials enable the child to order, classify, seriate and describe sensory impressions in relation, length, width, temperature, mass, color, etc.
3. The Montessori **mathematics** through the manipulative materials, allows the child to internalize the concepts of number, symbol, sequence, operations and memorization of basic facts.
4. The **language** work includes oral language development, written expression, reading, the study of grammar, creative dramatics and children's literature. Basic skills in writing and reading are developed through the use of sandpaper letters, alphabet cut-outs, and various presentations allowing children to effortlessly link sounds and letter symbols and to express their thoughts through writing.
5. The child is also presented with geography, history, and life sciences, music, art and movement education.

The prepared environment unifies the psycho-social, physical, and academic functioning of the child.

The Montessori Elementary Prepared Environment

(Ages 6-9/9-12)

The elementary program offers a continuum which builds on the preschool experience. The environment reflects a new stage of development and offers the following:

1. An integration of the arts, sciences, geography, history, and language evokes the native imagination and abstraction of the elementary child.
2. The presentation of knowledge as part of a large scale narrative unfolds the origins of the earth, of life, of human communities (agricultural and urban), of empires, and of modern history, always in the context of the wholeness of life.
3. The presentation of formal scientific language of zoology, botany, anthropology, geography, geology, etc. exposes the child to accurate, organized information which respects the child's intelligence and interests.
4. The use of timelines, pictures charts, and other visual aids provides a linguistic and visual overview of the first principles of each discipline.
5. The mathematics curriculum is presented with concrete materials which simultaneously reveal the arithmetic, geometric and algebraic correlations.

6. Montessori-trained adults are able to integrate the teaching of all subjects, not as isolated disciplines, but as part of a whole intellectual tradition.

7. The emphasis on open-ended research and in-depth study uses primary and secondary sources (books) as well as other materials.

8. "Going out," entails the ongoing use of community resources beyond the four walls of the classroom.

Parent Education and Parent Involvement

The parent of a Montessori student will have an opportunity to be involved in the Montessori program. Parents will learn about the program by:

1. Attending orientation meetings to explain the program;

2. Attending meetings where the unique aspects of a particular classroom as well as the specifics of Montessori curriculum are presented;

3. Attending class level open houses where the children, as the host/hostess to their parents and siblings, present their favorite activities;

4. Attending parent discussion groups dealing with aspects of childrearing, home environment, and child psychology;

5. Observing the class and discussing their observations with the Montessori professional; and

6. Receiving a regularly-published newsletter which includes a calendar of significant events, information on major developments at the school, book reviews, and a list of needs and requests for help.

In addition to Parent Education, which is designed primarily to orient the new parent and keep the returning parent informed, parents may form parent associations which coordinate volunteer activities, plan and carry out fundraising programs and lend support to school staff.

STARTING A SCHOOL

SECURING MONTESSORI MAGNET SCHOOL FUNDING

By David Lerch

The greatest single source of federal and state discretionary (competitive) funds for public school instructional improvement during the next decade will be based on "choice." Public school districts will develop programs that allow students to choose a school or educational program based on interest or need rather than on mandatory school assignment.

The single largest federal program that currently supports "choice" is the Magnet Schools Assistance Program. Successful applicant school districts are awarded up to four million dollars for two consecutive years to establish and operate schools with special themes capable of attracting students from throughout the school district or region.

As a result of these incentives, public school officials look for unique teaching or education approaches to make school programs attractive. The Montessori concept, which has a different education approach and a unique teaching methodology, is growing in popularity among public school educators developing magnet themes.

Since 1984, the Magnet Schools Assistance Program annual appropriation has grown from seventy-five million to over one hundred thirteen million dollars. Federally funded magnet school programs have proven to be successful as a school desegregation tool, a means of instructional improvement, and as programs that support the popular political concept of "choice." As a result, Congress will continue to provide large federal appropriations for magnet schools during the next decade. The Montessori concept, used for magnet themes in public school systems, will receive more federal resources for training, equipment, and materials than have ever been available in the private sector. Because of this, public school systems using federal magnet school grants are the future for Montessori education.

Public school districts that wish to seek federal support to establish a Montessori school within their district should review the current Magnet School Program legislation as the current major federal source of funds for such a project. It is an extremely competitive program and school districts should look closely at eligibility requirements before committing district resources and personnel to application development.

A district with racially isolated schools (those exceeding 50% minority) that has a representative distribution of both minority and non-minority students has the competitive edge. Smaller eligible districts can be successful by creating an application package that is responsive to the Magnet School Assistance Program regulations. To be successful, applicants must develop strong proposals that include all of the following elements:

- Enough information about the school district and the population it serves so that anyone reading the application becomes familiar with the area.
- A clear description of the need for a magnet (Montessori) program including evidence that it has the ability to attract students from different racial, ethnic, and economic backgrounds.
- An outline of the organizational structure of the school district and how it can be used to establish a successful magnet program.

Mr. Lerch is a Resource Development Officer at Wright State University, Dayton, Ohio.

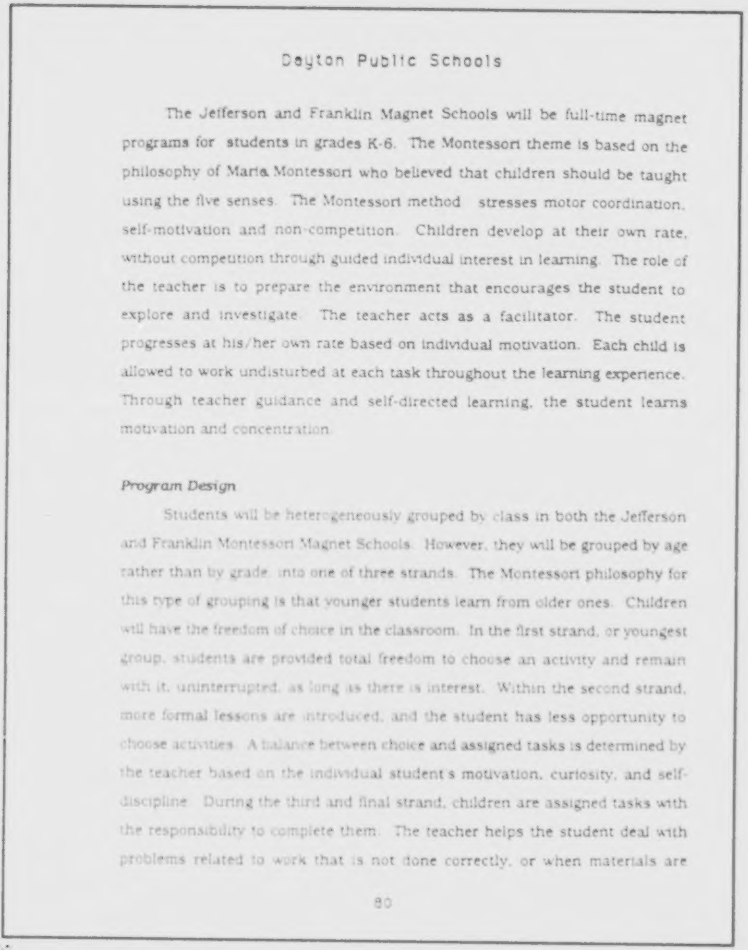
STARTING A SCHOOL

- Qualifications of the district personnel and others working with the magnet program and their experience establishing new and unique programs for students from different racial backgrounds.
- Specific program objectives that include a timeline and evidence that each can be accomplished using district resources.
- A reasonable budget based on activities described in the application.
- An evaluation plan based on the described objectives along with methods for quantifying the measured results.

Although the grant application document requires more information, those that do the best to describe those items listed above will receive the highest score.

Appendix 3: Magnet School Proposal Excerpt – Dayton Public Schools, Dayton, Ohio

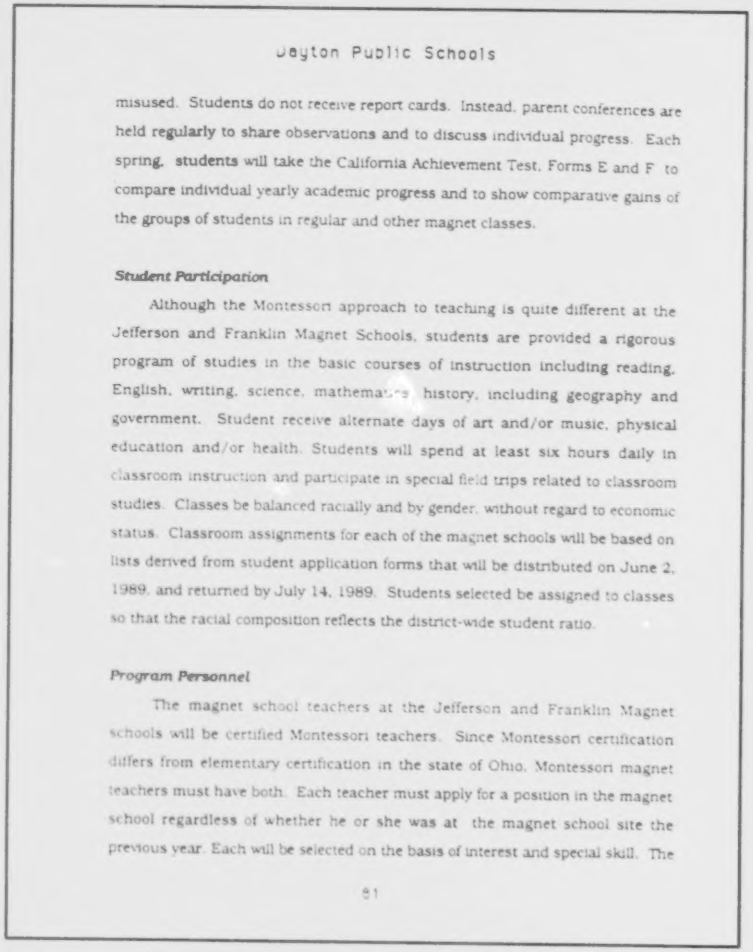
This proposal copy was written for the federal government in soliciting magnet school funds. Further information on magnet proposal writing can be obtained through the services of David Lerch, Wright State University, Dayton, Ohio 45435.



The Jefferson and Franklin Magnet Schools will be full-time magnet programs for students in grades K-6. The Montessori theme is based on the philosophy of Maria Montessori who believed that children should be taught using the five senses. The Montessori method stresses motor coordination, self-motivation and non-competition. Children develop at their own rate, without competition through guided individual interest in learning. The role of the teacher is to prepare the environment that encourages the student to explore and investigate. The teacher acts as a facilitator. The student progresses at his/her own rate based on individual motivation. Each child is allowed to work undisturbed at each task throughout the learning experience. Through teacher guidance and self-directed learning, the student learns motivation and concentration.

Program Design

Students will be heterogeneously grouped by class in both the Jefferson and Franklin Montessori Magnet Schools. However, they will be grouped by age rather than by grade, into one of three strands. The Montessori philosophy for this type of grouping is that younger students learn from older ones. Children will have the freedom of choice in the classroom. In the first strand, or youngest group, students are provided total freedom to choose an activity and remain with it, uninterrupted, as long as there is interest. Within the second strand, more formal lessons are introduced, and the student has less opportunity to choose activities. A balance between choice and assigned tasks is determined by the teacher based on the individual student's motivation, curiosity, and self-discipline. During the third and final strand, children are assigned tasks with the responsibility to complete them. The teacher helps the student deal with problems related to work that is not done correctly, or when materials are



misused. Students do not receive report cards. Instead, parent conferences are held regularly to share observations and to discuss individual progress. Each spring, students will take the California Achievement Test, Forms E and F to compare individual yearly academic progress and to show comparative gains of the groups of students in regular and other magnet classes.

Student Participation

Although the Montessori approach to teaching is quite different at the Jefferson and Franklin Magnet Schools, students are provided a rigorous program of studies in the basic courses of instruction including reading, English, writing, science, mathematics, history, including geography and government. Student receive alternate days of art and/or music, physical education and/or health. Students will spend at least six hours daily in classroom instruction and participate in special field trips related to classroom studies. Classes be balanced racially and by gender, without regard to economic status. Classroom assignments for each of the magnet schools will be based on lists derived from student application forms that will be distributed on June 2, 1989, and returned by July 14, 1989. Students selected be assigned to classes so that the racial composition reflects the district-wide student ratio.

Program Personnel

The magnet school teachers at the Jefferson and Franklin Magnet schools will be certified Montessori teachers. Since Montessori certification differs from elementary certification in the state of Ohio, Montessori magnet teachers must have both. Each teacher must apply for a position in the magnet school regardless of whether he or she was at the magnet school site the previous year. Each will be selected on the basis of interest and special skill. The racial composition of the teaching and administrative staff for the magnet program will be consistent with the racial balance of the student enrollment, approximately 63% minority and 37% non-minority for the 1989-90 school year. All staff members must have demonstrated experience using teaching strategies that have proven classroom success for teaching groups of students from different economic, racial, ethnic, and social backgrounds. In addition, teachers must be knowledgeable about instructional strategies for the mainstreaming of special education students into magnet classes. Montessori teachers must be willing to plan and conduct special field trips and work with parent advisory councils, administrative personnel, parents and instructional specialists to plan, revise, carry out and promote the magnet school program. They must also participate in parent/teacher student progress conferences, work with the parent advisory council, and instructional specialists to plan, revise, carry out, and promote the magnet program.

The Montessori Resource Specialist will be responsible for providing expertise in the area of th Montessori teaching methodology and will act as a resource to classroom teachers helping them to provide students with a strong academic program in a very structured environment. The Specialists will coordinate all field trip activities, participate in parent/teacher conferences and develop activities that include parents and other valuable community resources that are available to the school.

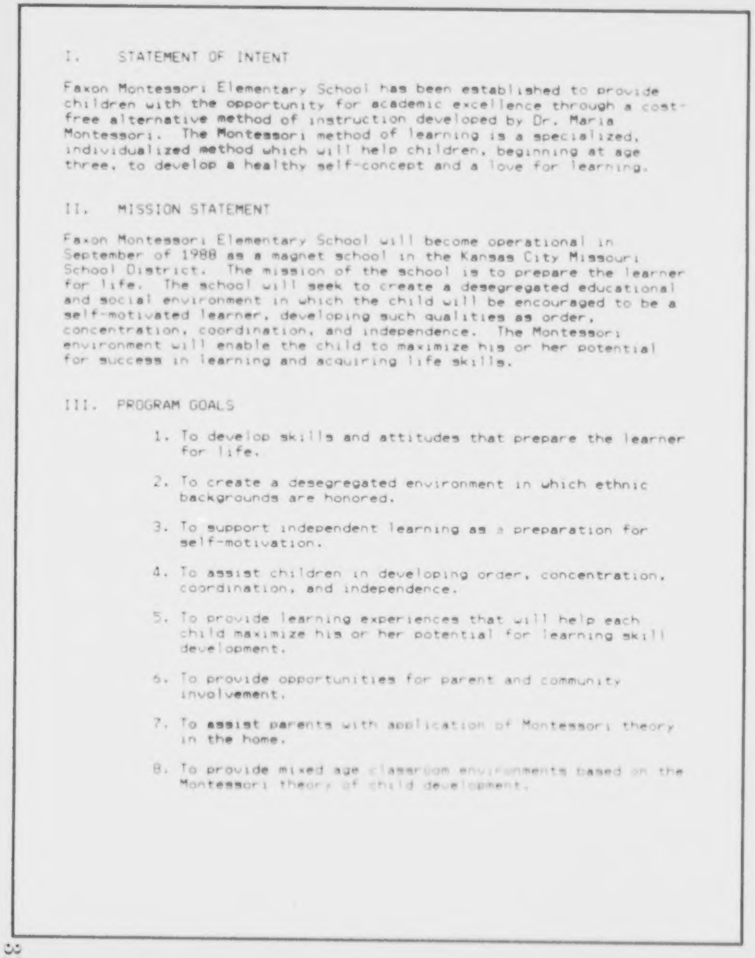
THE MIDDLE AND HIGH SCHOOL MAGNET SCHOOL PROGRAMS

The secondary magnet school curriculum is being designed to provide choices to students so that they can concentrate in specific fields of study while continuing to receive a strong academic program. The intent of the district's magnet school program is to offer students a strong foundation in the basic

Magnet School	Unique Curriculum	Special Resources
Jefferson Montessori Elementary Magnet School and Franklin Montessori Elementary Magnet School	Special teaching methodology designed to improve students knowledge of reading, English, mathematics, science, history, geography and American government. Areas of studies including: language mathematics practical life sensorial culture Adaptive investigation through use of manapulative objects and materials. Study of ethics to gain a sense of right and a worth of ideas. Emphasis on neatness, consistency, patience and attention to detail.	Staffing supported with state, local and federal resources include: Classroom teachers with special training in the teaching of core subjects with certification in the Montessori teaching method. Montessori specialists to work with classroom teachers providing new instructional ideas and techniques, updated Montessori materials and information. Montessori aides to assist specialist, teachers and students in the classroom and laboratory.

Appendix 4: Task Force Planning for New Magnet School — Faxon School, Kansas City, Missouri

Formulated by a task force of parents, teachers, and community members, this short document presents the planning, scope and timetable for a school. This document is presented for its format, and not its content which has standards particular to Faxon School that are not necessarily consistent with implementation standards stated in this publication. The unusually high number of resource personnel recommended here is related to the specifics of the court order.



I. STATEMENT OF INTENT

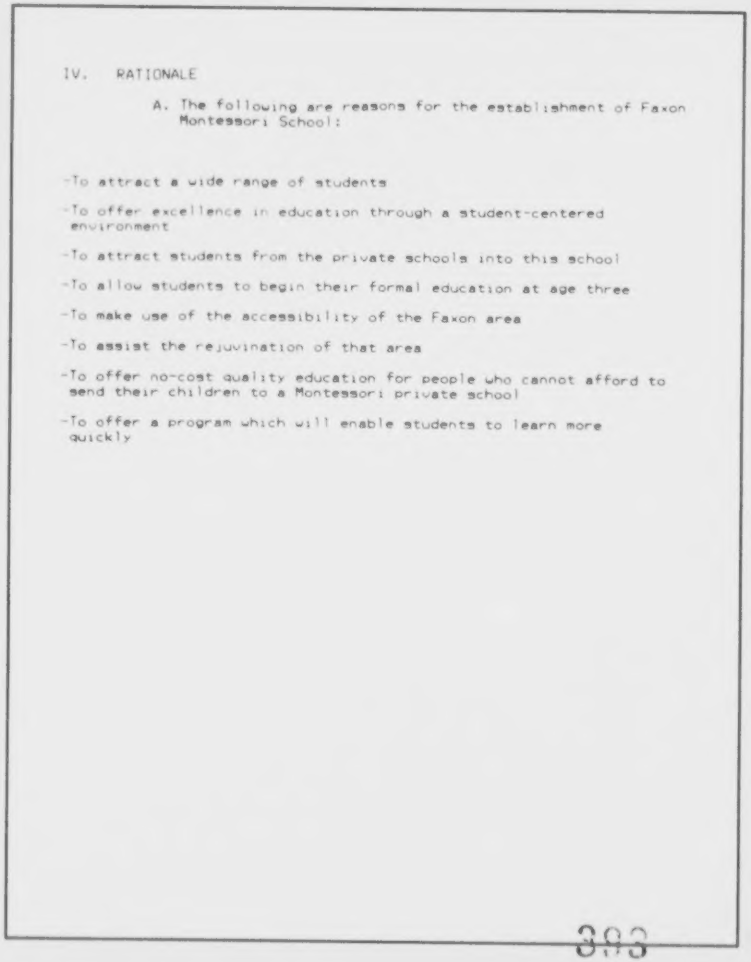
Faxon Montessori Elementary School has been established to provide children with the opportunity for academic excellence through a cost-free alternative method of instruction developed by Dr. Maria Montessori. The Montessori method of learning is a specialized, individualized method which will help children, beginning at age three, to develop a healthy self-concept and a love for learning.

II. MISSION STATEMENT

Faxon Montessori Elementary School will become operational in September of 1988 as a magnet school in the Kansas City Missouri School District. The mission of the school is to prepare the learner for life. The school will seek to create a desegregated educational and social environment in which the child will be encouraged to be a self-motivated learner, developing such qualities as order, concentration, coordination, and independence. The Montessori environment will enable the child to maximize his or her potential for success in learning and acquiring life skills.

III. PROGRAM GOALS

1. To develop skills and attitudes that prepare the learner for life.
2. To create a desegregated environment in which ethnic backgrounds are honored.
3. To support independent learning as a preparation for self-motivation.
4. To assist children in developing order, concentration, coordination, and independence.
5. To provide learning experiences that will help each child maximize his or her potential for learning skill development.
6. To provide opportunities for parent and community involvement.
7. To assist parents with application of Montessori theory in the home.
8. To provide mixed age classroom environments based on the Montessori theory of child development.



IV. RATIONALE

A. The following are reasons for the establishment of Faxon Montessori School:

-To attract a wide range of students

-To offer excellence in education through a student-centered environment

-To attract students from the private schools into this school

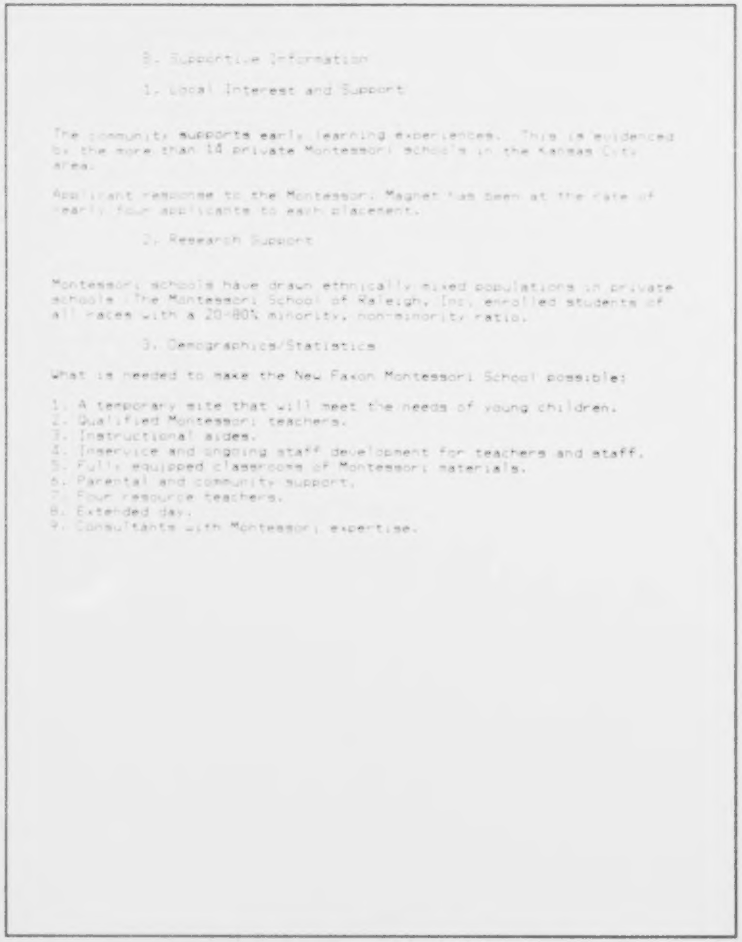
-To allow students to begin their formal education at age three

-To make use of the accessibility of the Faxon area

-To assist the rejuvination of that area

-To offer no-cost quality education for people who cannot afford to send their children to a Montessori private school

-To offer a program which will enable students to learn more quickly



B. Supportive Information

1. Local Interest and Support

The community supports early learning experiences. This is evidenced by the more than 14 private Montessori schools in the Kansas City area.

Applicant response to the Montessori Magnet has been at the rate of nearly four applicants to each placement.

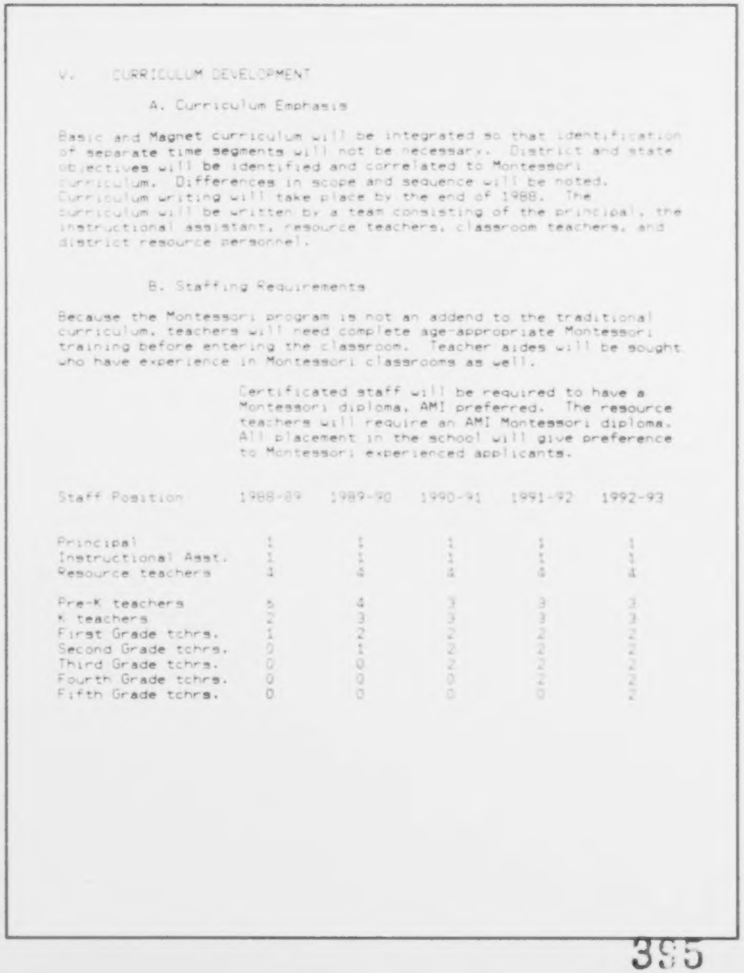
2. Research Support

Montessori schools have drawn ethnically mixed populations in private schools. (The Montessori School of Raleigh, Inc. enrolled students of all races with a 20-80% minority, non-minority ratio.

3. Demographics/Statistics

What is needed to make the New Faxon Montessori School possible:

1. A temporary site that will meet the needs of young children.
2. Qualified Montessori teachers.
3. Instructional aides.
4. Inservice and ongoing staff development for teachers and staff.
5. Fully equipped classrooms of Montessori materials.
6. Parental and community support.
7. Four resource teachers.
8. Extended day.
9. Consultants with Montessori expertise.



V. CURRICULUM DEVELOPMENT

A. Curriculum Emphasis

Basic and Magnet curriculum will be integrated so that identification of separate time segments will not be necessary. District and state objectives will be identified and correlated to Montessori curriculum. Differences in scope and sequence will be noted. Curriculum writing will take place by the end of 1988. The curriculum will be written by a team consisting of the principal, the instructional assistant, resource teachers, classroom teachers, and district resource personnel.

B. Staffing Requirements

Because the Montessori program is not an addend to the traditional curriculum, teachers will need complete age-appropriate Montessori training before entering the classroom. Teacher aides will be sought who have experience in Montessori classrooms as well.

Certificated staff will be required to have a Montessori diploma, AMI preferred. The resource teachers will require an AMI Montessori diploma. All placement in the school will give preference to Montessori experienced applicants.

Staff Position	1988-89	1989-90	1990-91	1991-92	1992-93
Principal	1	1	1	1	1
Instructional Asst.	1	1	1	1	1
Resource teachers	4	4	4	4	4
Pre-K teachers	5	4	3	3	3
K teachers	2	3	3	3	3
First Grade tchrs.	1	2	2	2	2
Second Grade tchrs.	0	1	2	2	2
Third Grade tchrs.	0	0	2	2	2
Fourth Grade tchrs.	0	0	0	2	2
Fifth Grade tchrs.	0	0	0	0	2

C. Staff Recruitment

1. April
   - -Distribute notices to District
   - -Mail 1500 notices nationally to Montessori teachers
   - -Co-sponsor National Montessori in the Public Conference as part of recruitment on the 29th and 30th

2. May
   - -Complete hiring of qualified applicants
   - -Notify certified teachers of Montessori training options

3. Develop re-certification program at UMKC in Early childhood certification for AMI Montessori graduates

---

D. Staff Development

1. Staff will need Montessori Certification above the aide level.

2. The staff development will be conducted using the approved Association Montessori Internationale standards for resource training and support.

3. Inservice will be held according to the following schedule:

Year 1	80 hrs. preservice 30 hrs. inservice
Year 2	40 hrs. preservice 30 hrs. inservice
Year 3	30 hrs. inservice

   New teachers will begin Year 1 schedule.

4. Areas of emphasis:

   District curriculum
   Montessori activities
   Extended day activities
   Parent/public relations
   Group dynamics
   Test analysis

5. Summer workshop preservice

August 1 to 5, and August 8 to 12

The staff development plan will be coordinated by the principal. He will plan the details with the Instructional Assistant, resource teachers, and school based curriculum group. It will be their responsibility to give inservice training and find qualified persons to help support the staff development plan goals.

Follow-up will occur on an individual basis with each teacher assessing individual needs. Each teacher will pursue various inservice training activities which will be planned with the principal. The coaching and feedback will occur in the classroom and will come from peers, the resource teachers, the instructional assistant, and the principal.

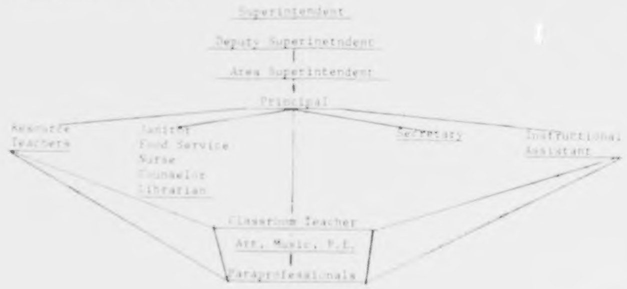
6. Resource Support - Internal and External

Internal resource support will be provided by the teachers, resource teachers, instructional assistant, principal, and specialists in the district.

External resource support will be provided by Association Montessori Internationale, the North American Montessori Teachers Association, and the Kansas City Life Insurance Company.

E. Leadership/Management Structure

1. Organizational Chart


Superintendent
Deputy Superinetndent
Area Superintendent
Principal
Resource Teachers
Janitor
Food Service
Nurse
Counselor
Librarian
Secretary
Instructional Assistant
Classroom Teacher
Art, Music, P.E.
Paraprofessionals

2. General Guidelines for Staff Team

Provide strong academic focus.

Understand the elements of effective Montessori instruction

Stimulate the use of the community as a center for learning

Promote the understanding of child development as a guide for learning

VI. STUDENT ENROLLMENT

A. Admissions Criteria

As per the Pink Plan, some students should not be admitted if it appears that they require unusual emphasis on structural learning and assistance. Initially, this determination should be made through interviews with applicant students and their parents.

Due to the special nature of the program, students should enter the program early, in grade one at the latest, with later admission allowed only for students with prior Montessori experience elsewhere.

No child, regardless of race, sex, or religion, will be prohibited from applying to attend the New Faxon Montessori School. Application procedures must be followed through the Kansas City Missouri School District Magnet Office. Appropriate racial balance will determine placement by the Magnet office.

B. Enrollment Goals

	88-89	89-90	90-91	91-92	92-93
Pre-K	120	100	60	60	60
Kindergarten	40	40	60	60	60
Fist Grade	20	40	40	40	40
Second Grade	0	20	40	40	40
Third Grade	0	0	40	40	40
Fourth Grade	0	0	0	40	40
Fifth Grade	0	0	0	0	40
Total	180	200	240	280	320

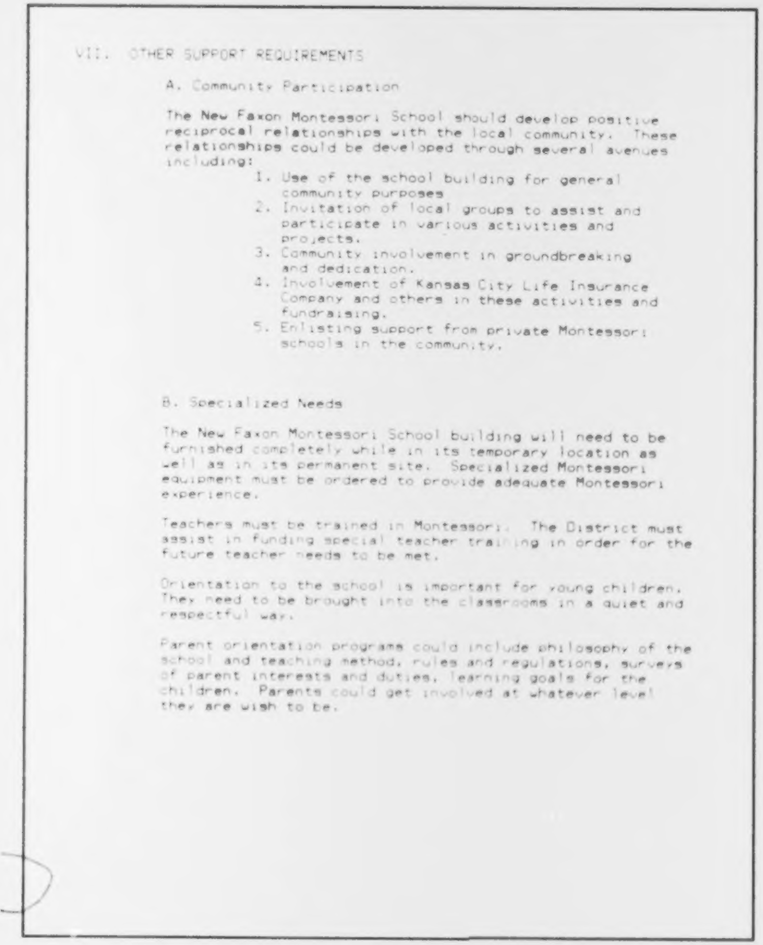
(three special education rooms of ten students each will be added upon completion of the new building)

One grade level per year will be added each year until the program extends through the fifth grade.

C. Recruitment Plan

Because of the extended day program in Faxon Montessori School, and the need of parents for early childhood assistance in education and care, the recruitment for the first year will be very moderate. Magnet school recruiters will provide brochures and phone information.

If the elementary grades need additional students in time, parent involvement in the school will be the best school advertisement. Recruiting elementary age Montessori students from private Montessori schools can be considered if necessary.



VII. OTHER SUPPORT REQUIREMENTS

A. Community Participation

The New Faxon Montessori School should develop positive reciprocal relationships with the local community. These relationships could be developed through several avenues including:

1. Use of the school building for general community purposes
2. Invitation of local groups to assist and participate in various activities and projects.
3. Community involvement in groundbreaking and dedication.
4. Involvement of Kansas City Life Insurance Company and others in these activities and fundraising.
5. Enlisting support from private Montessori schools in the community.

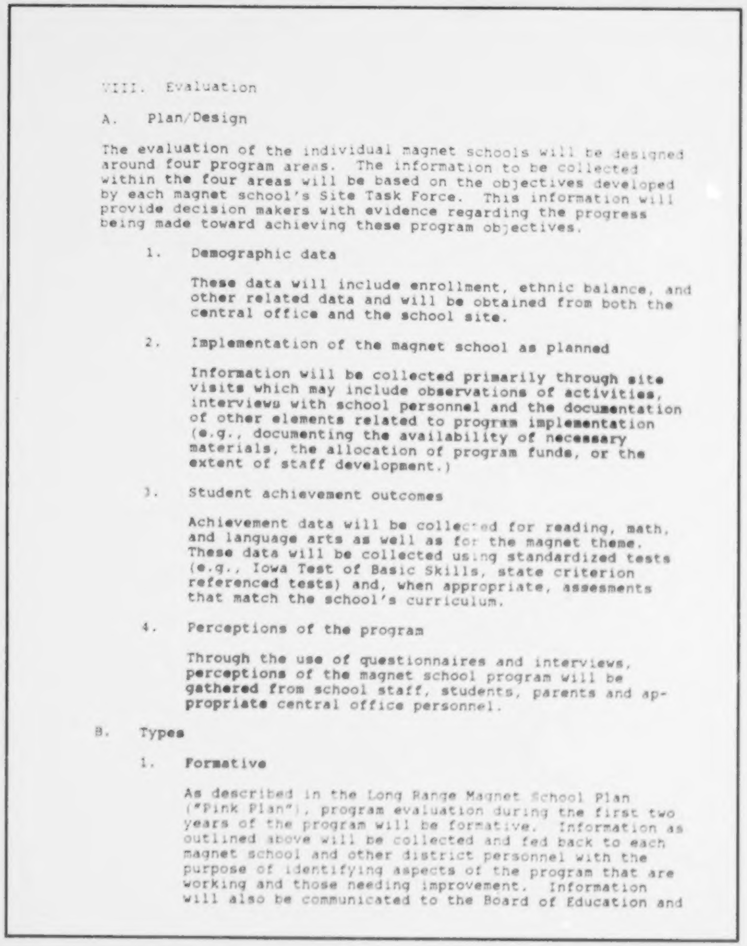
B. Specialized Needs

The New Faxon Montessori School building will need to be furnished completely while in its temporary location as well as in its permanent site. Specialized Montessori equipment must be ordered to provide adequate Montessori experience.

Teachers must be trained in Montessori. The District must assist in funding special teacher training in order for the future teacher needs to be met.

Orientation to the school is important for young children. They need to be brought into the classrooms in a quiet and respectful way.

Parent orientation programs could include philosophy of the school and teaching method, rules and regulations, surveys of parent interests and duties, learning goals for the children. Parents could get involved at whatever level they are wish to be.



VIII. Evaluation

A. Plan/Design

The evaluation of the individual magnet schools will be designed around four program areas. The information to be collected within the four areas will be based on the objectives developed by each magnet school's Site Task Force. This information will provide decision makers with evidence regarding the progress being made toward achieving these program objectives.

1. **Demographic data**

These data will include enrollment, ethnic balance, and other related data and will be obtained from both the central office and the school site.

2. **Implementation of the magnet school as planned**

Information will be collected primarily through site visits which may include observations of activities, interviews with school personnel and the documentation of other elements related to program implementation (e.g., documenting the availability of necessary materials, the allocation of program funds, or the extent of staff development.)

3. **Student achievement outcomes**

Achievement data will be collected for reading, math, and language arts as well as for the magnet theme. These data will be collected using standardized tests (e.g., Iowa Test of Basic Skills, state criterion referenced tests) and, when appropriate, assesments that match the school's curriculum.

4. **Perceptions of the program**

Through the use of questionnaires and interviews, perceptions of the magnet school program will be gathered from school staff, students, parents and appropriate central office personnel.

B. **Types**

1. **Formative**

As described in the Long Range Magnet School Plan ("Pink Plan"), program evaluation during the first two years of the program will be formative. Information as outlined above will be collected and fed back to each magnet school and other district personnel with the purpose of identifying aspects of the program that are working and those needing improvement. Information will also be communicated to the Board of Education and the Court Desegregation Monitoring Committee on the progress that is being made.

2. Summative

After the third year of program implementation a summative evaluation will be written. During this third year evaluation information will still be used in a formative manner, i.e., to foster program improvement, but at the end of the year emphasis will be placed on determining the effectiveness of the program in achieving its objectives.

C. Procedure

Evaluation staff will consult with the principal to determine indicators of accomplishment for each of the goals and to discuss possible evaluation strategies for the indicators prior to development of the detailed evaluation design.

IX. Time Line for Faxon Montessori School Site Plan

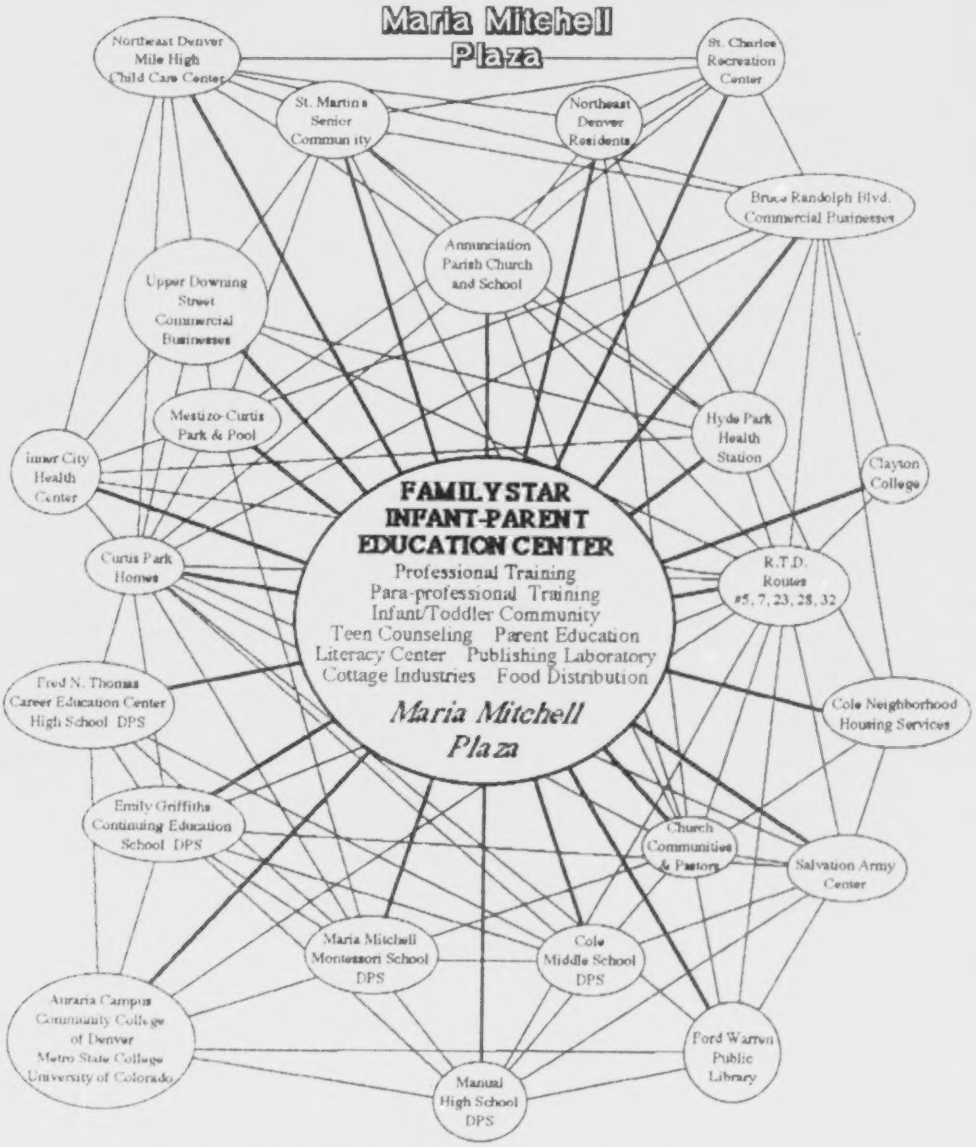
February-March	Begin site member inservice
April-May	Identify Montessori Distinctions Complete Planning Outline Visit Other Montessori Schools
June-July	Prepare Curriculum Outline District and Montessori Begin In-Depth Curriculum Writing
August	Inservice Prepare for School

X. Budget for Faxon Montessori School

		88-89	89-90	90-91	91-92
12	Aides	142,342	149,459	156,932	164,778
4	Resource Teachers	138,408	145,328	152,595	160,224
	Textbooks	5,000	5,000	5,000	5,000
	Materials and supplies	15,000	10,000	10,000	10,000
	Equipment	12,000	12,000	12,000	12,000
	Extended Day	100,000	100,000	100,000	100,000
	Printing and Advertising	2,500	2,500	2,500	2,500
Budget	Totals	415,249	424,287	439,026	454,503

Appendix 5: Preliminary Flier — Mitchell Montessori School, Denver Public Schools, Denver, Colorado

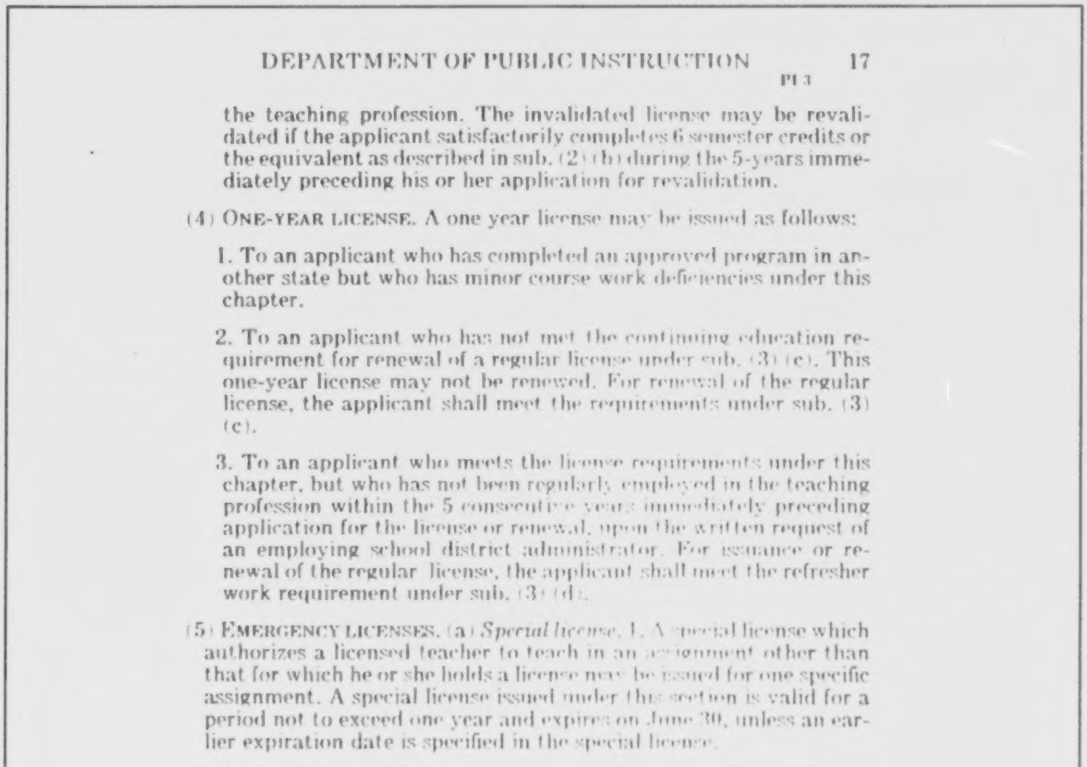
A preliminary publicity flier demonstrating the mission and community network of a beginning infant-parent center in conjunction with the Mitchell Montessori School.


Maria Mitchell Plaza
Northeast Denver Mile High Child Care Center
St. Charles Recreation Center
St. Martin's Senior Community
Northeast Denver Residents
Bruce Randolph Blvd. Commercial Businesses
Annunciation Parish Church and School
Upper Downing Street Commercial Businesses
Mestizo-Curtis Park & Pool
Hyde Park Health Station
Inner City Health Center
Clayton College
FAMILY STAR INFANT-PARENT EDUCATION CENTER
Professional Training
Para-professional Training
Infant/Toddler Community
Teen Counseling
Parent Education
Literacy Center
Publishing Laboratory
Cottage Industries
Food Distribution
Maria Mitchell Plaza
Curtis Park Homes
R.T.D. Routes #5, 7, 23, 28, 32
Fred N. Thomas Career Education Center High School DPS
Cole Neighborhood Housing Services
Emily Griffiths Continuing Education School DPS
Church Communities & Pastors
Salvation Army Center
Maria Mitchell Montessori School DPS
Cole Middle School DPS
Auraria Campus Community College of Denver Metro State College University of Colorado
Ford Warren Public Library
Manual High School DPS

Linking Northeast Denver agencies and social services with programs designed for newborns, infants, youths, and families.

Appendix 6: Certification Rules — Wisconsin Department of Public Instruction, Madison, Wisconsin

The highlighted clause below permits Milwaukee public schools to hire Montessori trained teachers with a grace period for obtaining a state license. This widens the number of eligible Montessori candidates significantly, especially experienced Montessori trained teachers who have worked in the private sector.



DEPARTMENT OF PUBLIC INSTRUCTION 17
PI 3

the teaching profession. The invalidated license may be revalidated if the applicant satisfactorily completes 6 semester credits or the equivalent as described in sub. (2) (b) during the 5-years immediately preceding his or her application for revalidation.

(4) ONE-YEAR LICENSE. A one year license may be issued as follows:

1. To an applicant who has completed an approved program in another state but who has minor course work deficiencies under this chapter.

2. To an applicant who has not met the continuing education requirement for renewal of a regular license under sub. (3) (c). This one-year license may not be renewed. For renewal of the regular license, the applicant shall meet the requirements under sub. (3) (c).

3. To an applicant who meets the license requirements under this chapter, but who has not been regularly employed in the teaching profession within the 5 consecutive years immediately preceding application for the license or renewal, upon the written request of an employing school district administrator. For issuance or renewal of the regular license, the applicant shall meet the refresher work requirement under sub. (3) (d).

(5) EMERGENCY LICENSES. (a) *Special license.* 1. A special license which authorizes a licensed teacher to teach in an assignment other than that for which he or she holds a license may be issued for one specific assignment. A special license issued under this section is valid for a period not to exceed one year and expires on June 30, unless an earlier expiration date is specified in the special license.

2. The district administrator or designated official of the employing school district shall request a special license in writing with full explanation and justification of the need. The request shall state that a search was conducted for a fully-licensed teacher and an explanation of why any fully-licensed candidates were not acceptable for employment.

3. The district administrator or designated official of the employing school district may request that a special license be renewed. The special license may be renewed if, between the date of issuance and the proposed renewal date, the applicant satisfactorily completes at least 6 semester credits toward completion of an approved program. The request for renewal shall be in writing and shall include a full explanation of the need for renewal.

4. The state superintendent may issue or deny a special license. The state superintendent shall deny a special license to an applicant who has not met the requirements in s. PI 3.05 (7), if the applicant completed the initial professional education program on or after August 31, 1992.

(b) *Permit.* 1. A permit which authorizes the holder to be employed for one specific assignment may be issued to a person who has a bachelor's degree but does not meet the license requirements under this chapter. A permit issued under this subdivision is valid for a period not to exceed one year and expires on June 30, unless an earlier expiration is stated in the permit.

Register, February, 1989, No. 398

Appendix 7: Schools Audits — North Avondale and Sands Montessori Schools, Cincinnati Public Schools, Cincinnati, Ohio

The following audit statement for Sands and North Avondale Schools shows outstanding desegregation results, comparatively good academic results, comparable costs in relation to other district operated schools, higher staff attendance and higher student attendance. These entries are helpful to new programs starting up because they document the high yield for the same money of established Montessori schools over a long period of time.

These composite summaries of the school year demonstrate the reliable performance of the Montessori magnet operations with actual test scores, costs for the 1987-1988 school year, and budget projects for 1988-1990. The Montessori Public School Consortium will compile a national survey of audit statements. They will be available Fall, 1990.

GENERAL FUND

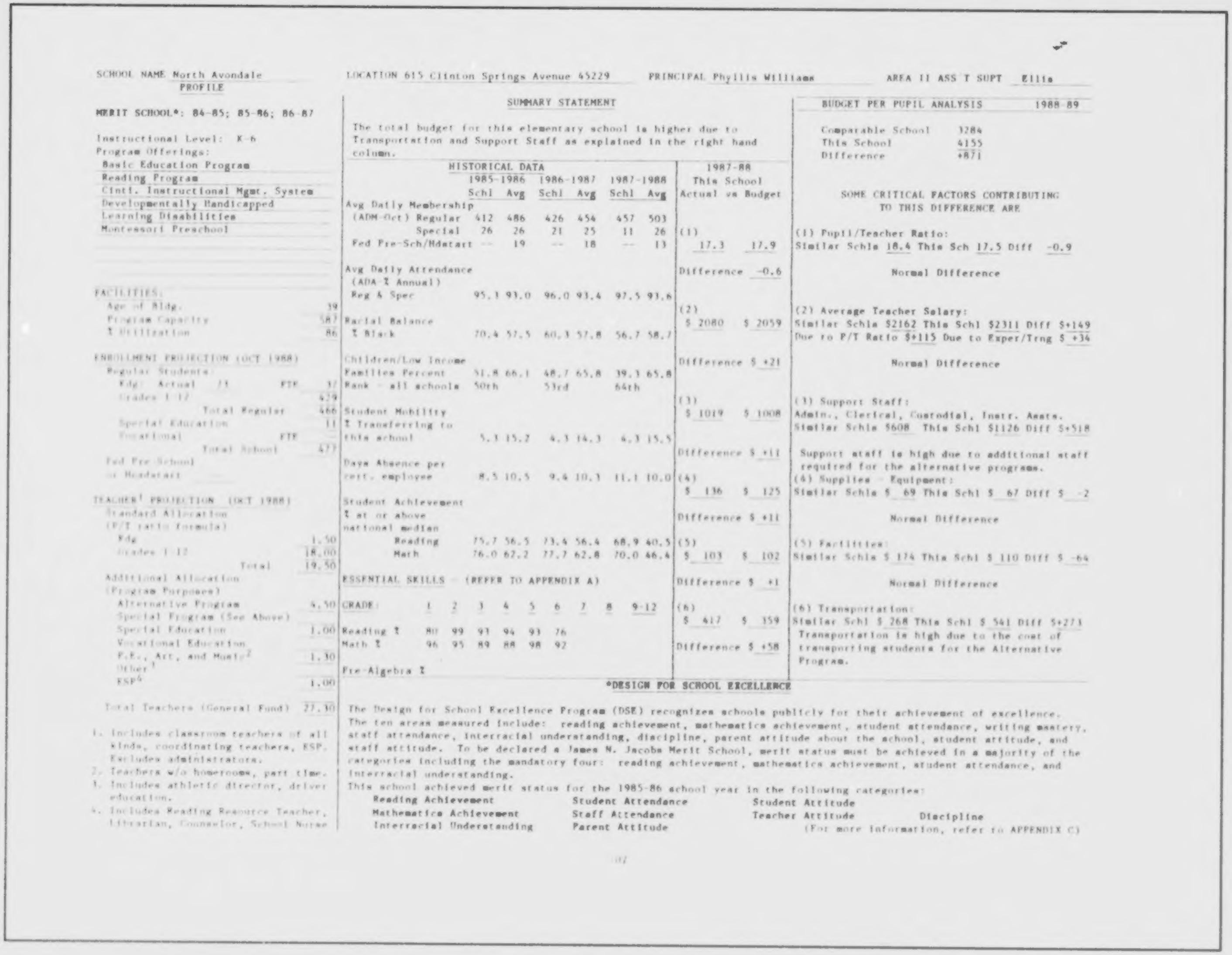
CINCINNATI PUBLIC SCHOOLS
BUDGET VS PREVIOUS YEAR ACTUAL
FICS 69500

NORTH AVONDALE
CENTER NUMBER 00000001620

FOR 6-30-88

ISSUED 9-12-88

************** F T E	**************			************** D O L L A R S	**************	
1987-88 ACTUAL	1988-89 BUDGETED	DIFFERENCE	DESCRIPTION	1987-88 ACTUAL	1988-89 BUDGETED	DIFFERENCE
			CERTIFICATED			
2.00	2.00	.00	ADMINISTRATION-SCHOOLS	82,442	91,259	8,817
4.00	4.00	.00	TEACHER-KINDERGARTEN	113,899	123,819	9,920
20.83	21.30	.47	TEACHER-ELEMENTARY	604,341	685,433	81,092
1.00	1.00	.00	TEACHER-READING RESOURCE	36,238	38,124	1,886
1.00	1.00	.00	TEACHER-SPECIAL EDUCATION	28,109	30,530	2,421
.00	.00	.00	TEACHER SUBSTITUTE	9,667	13,521	3,854
.00	.00	.00	OTHER	1,642	5,150	3,508
28.83	29.30	.47	TOTAL CERTIFICATED PERSONNEL	876,338	987,836	111,498
			CIVIL SERVICE			
2.00	2.00	.00	SECRETARIES AND CLERKS	26,780	27,377	597
21.78	24.00	2.22	INSTRUCTIONAL ASSISTANTS	186,641	210,299	23,658
4.79	5.00	.21	CLEANING AND HEATING	88,067	100,218	12,151
.00	.00	.00	SUBSTITUTE	1,553	4,836	3,283
.00	.00	.00	OVERTIME	2,821	2,028	793-
28.57	31.00	2.43	TOTAL CIVIL SERVICE PERSONNEL	305,862	344,758	38,896
.00	.00	.00	FRINGE BENEFITS	268,314	306,500	38,186
57.40	60.30	2.90	TOTAL PERSONNEL	1,450,514	1,639,094	188,580
			NON-PERSONNEL			
.00	.00	.00	SUPPLIES AND SUNDRY	0	0	0
.00	.00	.00	SUPPLIES/BOOKS AND MATERIALS	45,902	14,844	31,058-
.00	.00	.00	OFFICE SUPPLIES	5,870	1,230	4,640-
.00	.00	.00	REPAIR EQUIPMENT	1,590	2,020	430
.00	.00	.00	REPLACEMENT EQUIPMENT	409	4,691	4,282
.00	.00	.00	ADDITIONAL EQUIPMENT	9,775	9,150	625-
.00	.00	.00	STUDENT ACTIVITIES	120	150	30
.00	.00	.00	MAINTENANCE	2,809	2,000	809-
.00	.00	.00	FUEL AND UTILITIES	40,915	46,815	5,900
.00	.00	.00	OPERATIONAL SUPPLIES/CONTRACTS	4,492	3,865	627-
.00	.00	.00	PUPIL TRANSPORTATION	194,989	258,295	63,306
.00	.00	.00	ALL OTHER	173	0	173-
.00	.00	.00	TOTAL NON-PERSONNEL	307,044	343,060	36,016
57.40	60.30	2.90	TOTAL GENERAL FUND	1,757,558	1,982,154	224,596
			OTHER LOCAL,STATE & FED PROGRAMS			
2.76	3.17	.41	FOOD SERVICES	67,909	92,930	25,021
1.07	2.00	.93	CONTRACT INSTRUCTION	36,288	34,508	1,780-
.00	.00	.00	ESEA I / ECIA I	0	0	0
.00	.00	.00	VOCATIONAL EDUCATION	0	0	0
.00	.00	.00	MAGNET SCHOOLS ASSISTANCE ACT	9,887	0	9,887-
3.83	5.17	1.34	TOTAL LOCAL,STATE AND FEDERAL	114,085	127,438	13,353
61.23	65.47	4.24	GRAND TOTAL	1,871,643	2,109,592	237,949



SCHOOL NAME North Avondale LOCATION 615 Clinton Springs Avenue 45229 PRINCIPAL Phyllis Williams AREA II ASS'T SUPT Ellis

PROFILE

MERIT SCHOOL*: 84-85; 85-86; 86-87

Instructional Level: K-6

Program Offerings:
- Basic Education Program
- Reading Program
- Cintl. Instructional Mgmt. System
- Developmentally Handicapped
- Learning Disabilities
- Montessori Preschool

FACILITIES:

Age of Bldg.	39
Program Capacity	587
% Utilization	86

ENROLLMENT PROJECTION (OCT 1988)

Regular Students:		
Kdg: Actual 73	FTE	37
Grades 1-12		429
Total Regular		466
Special Education		11
Vocational	FTE	—
Total School		477
Fed Pre-School or Headstart		

TEACHER[1] PROJECTION (OCT 1988)

Standard Allocation (P/T ratio formula)	
Kdg	1.50
Grades 1-12	18.00
Total	19.50
Additional Allocation (Program Purposes)	
Alternative Program	4.50
Special Program (See Above)	
Special Education	1.00
Vocational Education	
P.E., Art, and Music[2]	1.30
Other[3]	
ESP[4]	1.00
Total Teachers (General Fund)	27.30

1. Includes classroom teachers of all kinds, coordinating teachers, ESP. Excludes administrators.
2. Teachers w/o homerooms, part time.
3. Includes athletic director, driver education.
4. Includes Reading Resource Teacher, Librarian, Counselor, School Nurse

SUMMARY STATEMENT

The total budget for this elementary school is higher due to Transportation and Support Staff as explained in the right hand column.

HISTORICAL DATA

	1985-1986		1986-1987		1987-1988	
	Schl	Avg	Schl	Avg	Schl	Avg
Avg Daily Membership						
(ADM-Oct) Regular	412	486	426	454	457	503
Special	26	26	21	25	11	26
Fed Pre-Sch/Hdstart	--	19	--	18	--	13
Avg Daily Attendance (ADA-% Annual)						
Reg & Spec	95.1	93.0	96.0	93.4	97.5	93.6
Racial Balance						
% Black	70.4	57.5	60.3	57.8	56.7	58.7
Children/Low Income Families Percent	51.8	66.1	48.7	65.8	39.3	65.8
Rank - all schools	50th		53rd		64th	
Student Mobility % Transferring to this school	5.3	15.2	4.3	14.3	4.3	15.5
Days Absence per cert. employee	8.5	10.5	9.4	10.3	11.1	10.0
Student Achievement % at or above national median						
Reading	75.7	56.5	73.4	56.4	68.9	40.5
Math	76.0	62.2	77.7	62.8	70.0	46.4

ESSENTIAL SKILLS - (REFER TO APPENDIX A)

GRADE:	1	2	3	4	5	6	7	8	9-12
Reading %	80	99	93	94	93	76			
Math %	96	95	89	88	98	92			
Pre-Algebra %									

1987-88
This School
Actual vs Budget

	Actual	Budget
(1)	17.3	17.9
Difference	-0.6	
(2)	$ 2080	$ 2059
Difference	$ +21	
(3)	$ 1019	$ 1008
Difference	$ +11	
(4)	$ 136	$ 125
Difference	$ +11	
(5)	$ 103	$ 102
Difference	$ +1	
(6)	$ 417	$ 359
Difference	$ +58	

BUDGET PER PUPIL ANALYSIS 1988-89

Comparable School	3284
This School	4155
Difference	+871

SOME CRITICAL FACTORS CONTRIBUTING
TO THIS DIFFERENCE ARE

(1) Pupil/Teacher Ratio:
Similar Schls 18.4 This Sch 17.5 Diff -0.9

Normal Difference

(2) Average Teacher Salary:
Similar Schls $2162 This Schl $2311 Diff $+149
Due to P/T Ratio $+115 Due to Exper/Trng $ +34

Normal Difference

(3) Support Staff:
Admin., Clerical, Custodial, Instr. Assts.
Similar Schls $608 This Schl $1126 Diff $+518

Support staff is high due to additional staff required for the alternative programs.

(4) Supplies - Equipment:
Similar Schls $ 69 This Schl $ 67 Diff $ -2

Normal Difference

(5) Facilities:
Similar Schls $ 174 This Schl $ 110 Diff $ -64

Normal Difference

(6) Transportation:
Similar Schl $ 268 This Schl $ 541 Diff $+273

Transportation is high due to the cost of transporting students for the Alternative Program.

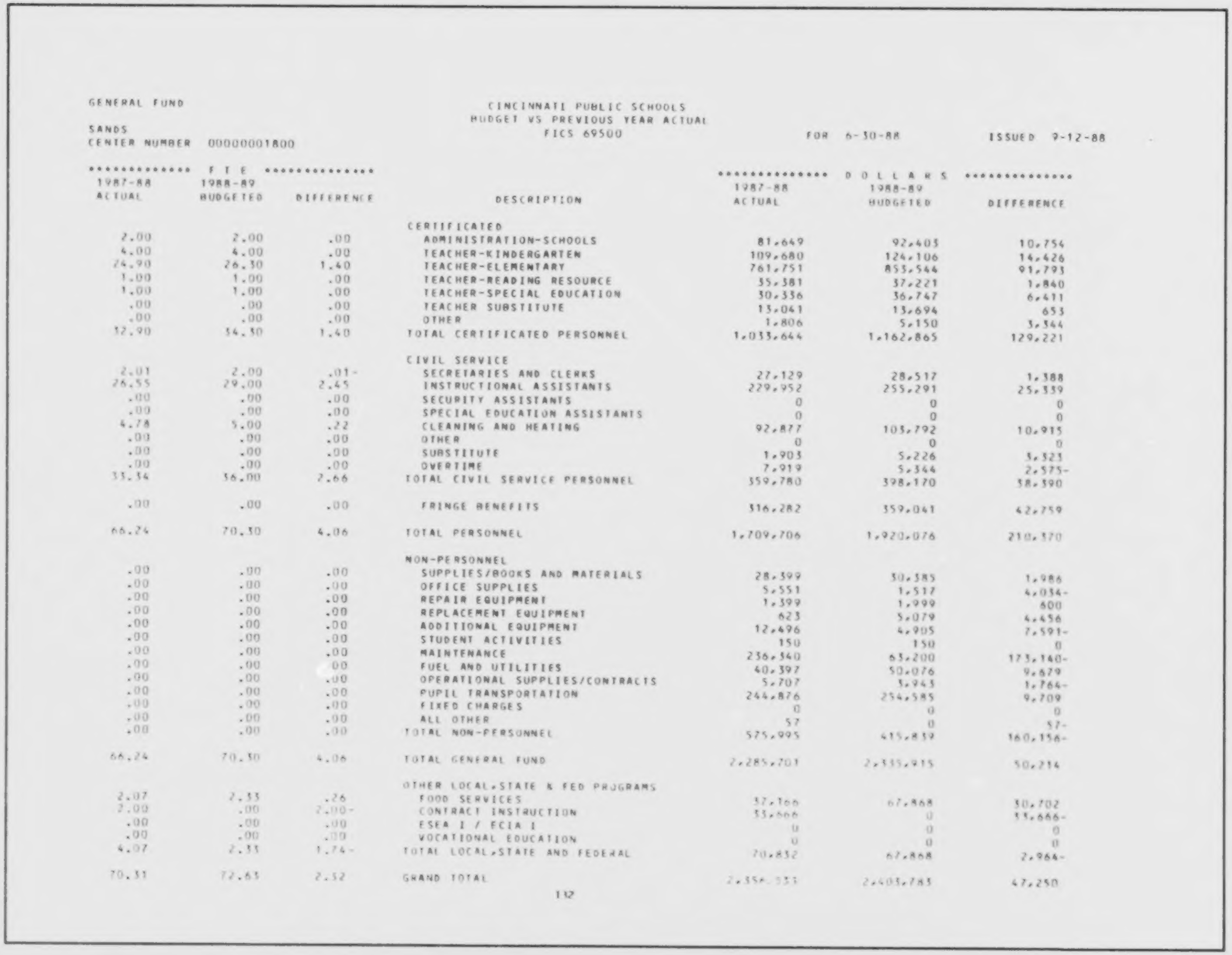
*DESIGN FOR SCHOOL EXCELLENCE

The Design for School Excellence Program (DSE) recognizes schools publicly for their achievement of excellence. The ten areas measured include: reading achievement, mathematics achievement, student attendance, writing mastery, staff attendance, interracial understanding, discipline, parent attitude about the school, student attitude, and staff attitude. To be declared a James N. Jacobs Merit School, merit status must be achieved in a majority of the categories including the mandatory four: reading achievement, mathematics achievement, student attendance, and interracial understanding.

This school achieved merit status for the 1985-86 school year in the following categories:

Reading Achievement	**Student Attendance**	**Student Attitude**	
Mathematics Achievement	**Staff Attendance**	**Teacher Attitude**	**Discipline**
Interracial Understanding	**Parent Attitude**		

(For more information, refer to APPENDIX C)



GENERAL FUND

CINCINNATI PUBLIC SCHOOLS
BUDGET VS PREVIOUS YEAR ACTUAL
FICS 69500

SANDS
CENTER NUMBER 00000001800

FOR 6-30-88

ISSUED 9-12-88

************* F T E	**************			*************** D O L L A R S	**************	
1987-88 ACTUAL	1988-89 BUDGETED	DIFFERENCE	DESCRIPTION	1987-88 ACTUAL	1988-89 BUDGETED	DIFFERENCE
			CERTIFICATED			
2.00	2.00	.00	ADMINISTRATION-SCHOOLS	81,649	92,403	10,754
4.00	4.00	.00	TEACHER-KINDERGARTEN	109,680	124,106	14,426
24.90	26.30	1.40	TEACHER-ELEMENTARY	761,751	853,544	91,793
1.00	1.00	.00	TEACHER-READING RESOURCE	35,381	37,221	1,840
1.00	1.00	.00	TEACHER-SPECIAL EDUCATION	30,336	36,747	6,411
.00	.00	.00	TEACHER SUBSTITUTE	13,041	13,694	653
.00	.00	.00	OTHER	1,806	5,150	3,344
32.90	34.30	1.40	TOTAL CERTIFICATED PERSONNEL	1,033,644	1,162,865	129,221
			CIVIL SERVICE			
2.01	2.00	.01-	SECRETARIES AND CLERKS	27,129	28,517	1,388
26.55	29.00	2.45	INSTRUCTIONAL ASSISTANTS	229,952	255,291	25,339
.00	.00	.00	SECURITY ASSISTANTS	0	0	0
.00	.00	.00	SPECIAL EDUCATION ASSISTANTS	0	0	0
4.78	5.00	.22	CLEANING AND HEATING	92,877	103,792	10,915
.00	.00	.00	OTHER	0	0	0
.00	.00	.00	SUBSTITUTE	1,903	5,226	3,323
.00	.00	.00	OVERTIME	7,919	5,344	2,575-
33.34	36.00	2.66	TOTAL CIVIL SERVICE PERSONNEL	359,780	398,170	38,390
.00	.00	.00	FRINGE BENEFITS	316,282	359,041	42,759
66.24	70.30	4.06	TOTAL PERSONNEL	1,709,706	1,920,076	210,370
			NON-PERSONNEL			
.00	.00	.00	SUPPLIES/BOOKS AND MATERIALS	28,399	30,385	1,986
.00	.00	.00	OFFICE SUPPLIES	5,551	1,517	4,034-
.00	.00	.00	REPAIR EQUIPMENT	1,399	1,999	600
.00	.00	.00	REPLACEMENT EQUIPMENT	623	5,079	4,456
.00	.00	.00	ADDITIONAL EQUIPMENT	12,496	4,905	7,591-
.00	.00	.00	STUDENT ACTIVITIES	150	150	0
.00	.00	.00	MAINTENANCE	236,340	63,200	173,140-
.00	.00	.00	FUEL AND UTILITIES	40,397	50,076	9,679
.00	.00	.00	OPERATIONAL SUPPLIES/CONTRACTS	5,707	3,943	1,764-
.00	.00	.00	PUPIL TRANSPORTATION	244,876	254,585	9,709
.00	.00	.00	FIXED CHARGES	0	0	0
.00	.00	.00	ALL OTHER	57	0	57-
.00	.00	.00	TOTAL NON-PERSONNEL	575,995	415,839	160,156-
66.24	70.30	4.06	TOTAL GENERAL FUND	2,285,701	2,335,915	50,214
			OTHER LOCAL,STATE & FED PROGRAMS			
2.07	2.33	.26	FOOD SERVICES	37,166	67,868	30,702
2.00	.00	2.00-	CONTRACT INSTRUCTION	33,666	0	33,666-
.00	.00	.00	ESEA I / ECIA I	0	0	0
.00	.00	.00	VOCATIONAL EDUCATION	0	0	0
4.07	2.33	1.74-	TOTAL LOCAL,STATE AND FEDERAL	70,832	67,868	2,964-
70.31	72.63	2.32	GRAND TOTAL	2,356,533	2,403,783	47,250

132

SCHOOL NAME Sands　　LOCATION 940 Poplar Street 45214　　PRINCIPAL Sandra J. Sommer　　AREA I ASS'T SUPT Baringer

PROFILE

MERIT SCHOOL*: 84-85; 85-86; 86-87

Instructional Level: K-6
Program Offerings:
Montessori Program
Cintl. Instructional Mgmt. Systems
Learning Disabilities
Montessori Preschool

FACILITIES:

Age of Bldg.	76
Program Capacity	725
% Utilization	88

ENROLLMENT PROJECTION (OCT 1988)

Regular Students:		
Kdg: Actual 95	FTE	48
Grades 1-12		532
Total Regular		580
Special Education		10
Vocational	FTE	--
Total School		590
Fed Pre-School or Headstart --		

TEACHER[1] PROJECTION (OCT 1988)

Standard Allocation (P/T ratio formula)	
Kdg	2.00
Grades 1-12	21.00
Total	23.00
Additional Allocation (Program Purposes)	
Alternative Program	6.00
Special Program (See Above)	
Special Education	1.00
Vocational Education	
P.E., Art, and Music[2]	1.30
Other[3]	
ESP[4]	1.00
Total Teachers (General Fund)	32.30

1. Includes classroom teachers of all kinds, coordinating teachers, ESP. Excludes administrators.
2. Teachers w/o homerooms, part time.
3. Includes athletic director, driver education.
4. Includes Reading Resource Teacher, Librarian, Counselor, School Nurse.

SUMMARY STATEMENT

The total budget for this elementary school is high due to Support Staff and Transportation as explained in the right hand column.

HISTORICAL DATA

	1985-1986 Schl	1985-1986 Avg	1986-1987 Schl	1986-1987 Avg	1987-1988 Schl	1987-1988 Avg
Avg Daily Membership (ADM-Oct) Regular	598	486	572	454	582	503
Special	11	26	9	25	11	26
Fed Pre-Sch/Hdstart	--	19	--	18	--	13
Avg Daily Attendance (ADA-% Annual) Reg & Spec	98.3	93.0	98.2	93.4	98.7	93.6
Racial Balance % Black	49.9	57.5	51.0	57.8	50.0	58.7
Children/Low Income Families Percent	40.3	66.1	40.7	65.8	40.8	65.8
Rank - all schools	63rd		60th		62nd	
Student Mobility % Transferring to this school	1.7	15.2	2.1	14.3	2.2	15.5
Days Absence per cert. employee	8.7	10.5	9.0	10.3	8.5	10.0
Student Achievement % at or above national median Reading	74.2	56.5	72.9	56.4	63.9	40.5
Math	80.2	62.2	79.1	62.8	69.7	46.4

1987-88 This School Actual vs Budget

	Actual	Budget	Difference
(1)	19.1	17.2	+1.9
(2)	$ 1967	$ 2160	$-193
(3)	$ 915	$ 953	$ -38
(4)	$ 82	$ 73	$ +9
(5)	$ 476	$ 112	$+364
(6)	$ 413	$ 460	$ -47

ESSENTIAL SKILLS - (REFER TO APPENDIX A)

GRADE:	1	2	3	4	5	6	7	8	9-12
Reading %	75	93	91	87	86	89			
Math %	89	93	90	67	86	88			
Pre-Algebra %									

BUDGET PER PUPIL ANALYSIS　　1988-89

Comparable School	3284
This School	3959
Difference	+ 675

SOME CRITICAL FACTORS CONTRIBUTING TO THIS DIFFERENCE ARE

(1) Pupil/Teacher Ratio:
Similar Schls 18.4 This Sch 18.3 Diff -0.1

Normal Difference

(2) Average Teacher Salary:
Similar Schls $2162 This Schl $2234 Diff $ +72
Due to P/T Ratio $ +16 Due to Exper/Trng $ +56

Normal Difference

(3) Support Staff:
Admin., Clerical, Custodial, Instr. Assts.
Similar Schls $ 608 This Schl $1020 Diff $+412
Support staff is high due to the instructor assistants required in the alternative program.

(4) Supplies - Equipment:
Similar Schls $ 69 This Schl $ 74 Diff $ +5

Normal Difference

(5) Facilities:
Similar Schls $ 174 This Schl $ 199 Diff $ +25

Normal Difference

(6) Transportation:
Similar Schl $ 268 This Schl $ 432 Diff $+164
Transportation is high due to the cost of transporting students for the alternative program.

***DESIGN FOR SCHOOL EXCELLENCE**

The Design for School Excellence Program (DSE) recognizes schools publicly for their achievement of excellence. The ten areas measured include: reading achievement, mathematics achievement, student attendance, writing mastery, staff attendance, interracial understanding, discipline, parent attitude about the school, student attitude, and staff attitude. To be declared a James N. Jacobs Merit School, merit status must be achieved in a majority of the categories including the mandatory four: reading achievement, mathematics achievement, student attendance, and interracial understanding.

This school achieved merit status for the 1985-86 school year in the following categories:

Mathematics Achievement	**Reading Achievement**	**Staff Attendance**	**Writing Mastery**
Interracial Understanding	**Student Attendance**	**Parent Attitude**	**Discipline**
Teacher Attitude	**Student Attitude**		

(For more information, refer to APPENDIX C)

ADMISSIONS

ADMISSIONS AND RECRUITMENT

NON-SELECTIVE ADMISSIONS

MAGNET SCHOOL RECRUITMENT

PROMOTIONS

ADMISSION APPLICATION PROCEDURES

Admissions policies in Montessori public schools must avoid tendencies to select only families already familiar with Montessori education. The admissions procedure needs to inform applicants about Montessori so that parents make the right choice for the right reasons. The admissions process sets the tone for the family's relationship to the school and is the starting point for future parent involvement.

ADMISSIONS

ADMISSIONS AND RECRUITMENT

Results of a 1988 NAMTA survey of Montessori Public Schools throughout the country indicated that there are a number of different approaches to handling admissions. Approximately 25 percent of the Montessori public schools utilized a screening process including a teacher interview in their admissions process, 47 percent operated on a first come, first serve basis, while still another 30 percent used a lottery method. Race, gender, and prior Montessori schooling constituted major factors for both selective and nonselective admissions. Special needs classification, economic or linguistic disadvantages, geographical location of applicant, had little or no bearing on the admissions process. Almost a third of the programs had extensive waiting lists. The following procedures characterize most magnet programs:

- Prior Montessori schooling usually means that Montessori children are selected from *private* Montessori schools which feed into the kindergarten year of the public school. Admitting private school children is regarded by some districts as elitist because it gives preferential treatment to those who can afford private school tuition. Other school districts appreciate the infusion of well prepared private school children as they offer a more balanced class composition.
- Magnet schools usually develop advanced promotional material to keep their schools competitive with other magnet programs. They also distribute handbooks with well defined expectations in order to discourage those parents who may not have the interest or time for extensive parent participation that many Montessori schools require at the outset.
- Screening is largely used to determine whether the family is willing to work with the school. Parent involvement and awareness is oftentimes initiated with a parent observation in order to bring the parent immediately into the Montessori experience. At the time of observation, an interview with a Montessori trained representative or the principal is desirable as part of the recruitment and screening process. (See appendix for interview forms and recommendations for prospective parents.) The primary purpose of the interview is to convey Montessori principles and approaches at the point of entry and to enlist the parents' support.
- Admissions in most Montessori public schools follow conventional cut-off dates for the entrance age of the child (e.g. you must be there by a specific date — October 1). It is recommended that the admittance of children over age four without Montessori experience should be limited to one or two children per classroom annually for best results.
- A few districts utilize recruiters to screen applicants who, like the school administration, can measure their success by those who make a long-term commitment to the school.

ADVANTAGES OF NON-SELECTIVE ADMISSIONS

by Timothy Duax

- ***Montessori admissions are either selective or non-selective in their policy orientation.***
- ***The use of open, non-selective enrollment can result in equitable, quality Magnet Schools.***

The intent of offering Montessori magnet schools as well as other magnet specialties in public school systems is to provide options previously denied to public school parents and to promote choice, diversity, desegregation, and increased equal educational opportunity in the public domain (Coleman, 1981; Uchitelle, Harris & Libros, 1984; Rossell, 1985; Hentschke, Lowe & Royster, 1985; Levine & Eubanks, 1986). For this reason, the type of magnet school increasingly being used is a "nonselective" magnet school which has a distinct curriculum or instructional mode and is open to a broad range of students, *not* just a select group.

Blank (1983), in a federally funded national study of magnet schools, looked closely at the issue of selectivity. Selectivity was classified into four types: (1) student self-selection, which is inherent in the magnet concept; (2) market focus, which is expressed in the ways magnets are advertised (e.g., as when a magnet is presented as a rigorous and accelerated program), (3) applicant screening, which may include both behavioral and academic standards for admission; and (4) post-entry mechanisms for transferring students who do not perform or behave in accordance with the magnet's standards.

Equal education opportunity is maintained by an active out-reach program which focuses on informing and following up on parents who may not have the skills, the language, or the community ties to adequately complete the registration process for school selection.

Nonselectivity was defined by the study as magnet schools that: (1) admit students on a first come, first serve basis or by means of a lottery, with no consideration of anything but interest in the theme; (2) do not remand students for any reason; and (3) host lower-spectrum-needs students (e.g., learning disabled, emotionally disturbed).

Blank recommended that nonselectivity be used as part of the ideal design for cities implementing magnet schools.

Several cities have established magnet schools which are formally selective through the use of entrance requirements. Other cities have developed nonselective magnet schools which use open enrollment through lottery schemes to admit children of all abilities. Access for students on the basis of voluntary preference and lottery is an attempt to ensure equal educational opportunities for children and avoids the outright tracking of children based on academic ability or behavior. School systems using tracking have been successfully challenged in court (Raywid, 1985).

Timothy Duax works in administration and research with the Milwaukee Public Schools.

ADMISSIONS

When implementing nonselective magnet schools, lottery selection is intended to deal equitably with programs having over-enrollment due to popular demand. Lotteries are designed to maintain the ethnic balance of the overall public school population. In school systems where it is used, parents are informed well in advance through city-wide mailings of availability of programs and their descriptions, and are given registration forms to mail or to present to either the particular school, a parent advocacy office, or the school system central office. Parents are often asked to select second or third school choices. The lottery can consist of two or three "rounds" in which parents are given their second or third choices as particular programs become filled.

Equal education opportunity is maintained by an active outreach program which focuses on informing and following up on parents who may not have the skills, the language, or the community ties to adequately complete the registration process for school selection. This is especially the case when magnet schools offer innovative programming such as Montessori early childhood education, since many parents may not be aware of the necessity of early registration for young children first entering schools.

The use of open enrollment based on voluntary preference, lottery selection, and community awareness through outreach can result in formation of equitable, quality magnet schools. Public Montessori magnet schools have already been established which are nonselective, provide a service to the school systems of which they are apart, demonstrate strong academic achievement, and educate in a stimulating environment a broad spectrum of diverse children.

REFERENCES

Blank, R. K. (1983) "Survey of magnet schools. Analyzing a model for quality integrated education. Final Report." Abt Assoc. Inc., (A paper prepared for the Dept. of Education, Washington D.C. Office of Planning, Budget, and Evaluation.) September.

Coleman, J. (1981) "The role of incentives in school desegregation." (*A chapter in Race and Schooling in the City.* Edited by Yarmolinsky, A., Liebman, L., and Corinne, S.) (1981) Harvard University Press, Cambridge.

Hentschke, G.; Lowe, W. & Royster, E. (1985) "School desegregation policy for the next thirty years." *Urban Education* 20:2 (July): 149-175.

Levine, D. & Eubanks, E. (1986) "The promise and limitations of regional desegregation plans for central city school districts." *Metropolitan Education 1,* (Spring): 36-51.

Raywid, M. (1985) "Family choice arrangements in public schools." *Harvard Review of Educational Research 55,* No. 4:435-467.

Rossell, C. (1985) "What is attractive about magnet schools?" *Urban Education* 20:1 (April): 7-22.

Uchitelle, S.; Harris, D. & Libros, T. (1984) "The St. Louis plan." *Equity and Choice* 1:1 (Fall): 75-83.

ADMISSIONS

CASE STUDY: MONTESSORI MAGNET SCHOOL RECRUITMENT

by Martha Vincent

- ***Many families who come to Montessori are uninformed about Montessori education. The recruiter for a Montessori program keeps families informed about Montessori from the start.***
- ***In the preliminary interview with a prospective parent, it is important to find out as much as possible about the parent's lifestyles, values and expectations, and guide them to Montessori ideas.***

For the past eighteen months I have been employed as a recruiter for magnet schools in a public school system. The magnet school plan for the district was designed as the remedy in a federally court-ordered desegregation case, and it gives protection to the proper implementation of special themes — Montessori in particular. The Montessori program is self-contained — a school in its own right — not merely a program within a school. Administrators and teachers are required to have recognized Montessori training as well as state certification. Students are admitted to the program only after an interview with the principal or the teaching staff. After the start-up year, only new three year olds are added with the occasional four or five year old to fill any vacancies. Applicants for the elementary program must have Montessori preschool experience in order to be eligible for placement.

Recruiting for this particular Montessori magnet school program was not difficult. Most parents applied without even seeing the building or meeting the principal and staff. There was a tremendous rush of applications — over a thousand for 180 student slots. The biggest problem was scheduling the prerequisite interview for the first 300 applicants. Because of the time constraints, the opening year did not allow for much counseling or screening of parents.

Montessori programs can meet the needs of most every child; meeting the needs of parents is more difficult. It is important that each parent visitor be welcomed to the school with warmth and hospitality. The same grace and courtesy lessons demonstrated to the children should be used with all visitors to the building. In a preliminary interview with a prospective parent, it is important to find out as much as possible about the parent's lifestyle, values and expectations. This is not to screen out any child or parent, rather it is helpful information when informing the parent of the philosophy and goals and expectations of the Montessori program, and when giving the parent an overview of the kind of support and involvement the school needs so the child will have the best Montessori experience possible.

From the beginning interview it is important to explain the scope of the full primary and elementary Montessori experience to the parents of preschool age children. It is a challenge to retain children who come to a Montessori program simply for the preschool or daycare aspect of the program. When a parent who has made the choice to stay only for the "kindergarten" year decides to continue in the elementary program, it is clear the interactions with the parents were successful.

The work of recruitment for a Montessori program is really one of retention. It is not particularly difficult to attract students to fill a primary program, and grievous as it may sound, it is not really all that

---

Martha Vincent is a magnet school recruiter for the Kansas City, Missouri Public Schools.

important that they come for the "right" reasons. It can be a concern that parents choose Montessori to take advantage of a few hours away from their preschool children or that they need a "socially elite" daycare center. In reality, however, what is important is what we have the opportunity to offer the children, not what brings them to Montessori initially. In many cases the child would have no other chance to realize independence, positive social development, academic tools, and life skills without the experiences a Montessori program offers. Socioeconomic levels aside, many parents simply do not understand the special needs and developmental stages of their children. Montessori is one of the few educational philosophies that deals with the whole child.

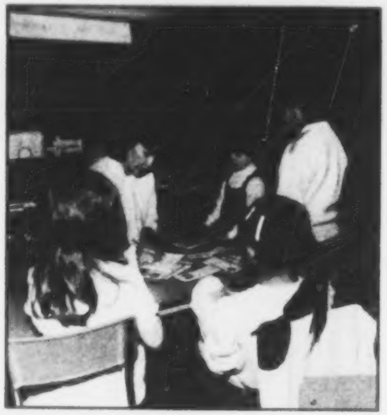
No matter what motivates the parent to choose a Montessori program, "right" or "wrong," it becomes the responsibility of the school to educate the parent as well as the child. The parent must understand the guiding philosophy of the Montessori Method and be given the opportunity to become familiar with the program goals and expectations. Parents need to observe the child in the Montessori environment. Then they must be gently encouraged to align their own goals and expectations with a new awareness and understanding of the needs of the child.

The parent must understand the guiding philosophy of the Montessori Method and be given the opportunity to become familiar with the program goals and expectations.

Parent education is not only desirable, it is essential to the survival of a public Montessori school. In a district where choices are encouraged and programs become very competitive for students, the largely misunderstood Montessori program can thrive well at the primary level then lose students rapidly in the elementary years, particularly at the kindergarten-to-first-grade juncture. It is the job of each administrator, classroom teacher, recruiter, and admissions counselor to provide information to make parents aware of the tremendous scope of a fully-developed Montessori program that will allow the parent to make an informed, intelligent educational choice in the best interest of the child.

Appendix 1: Recruitment Brochures — Vancouver, British Columbia, Denver, and Cincinnati

Recruitment brochures tend to be general and pictorial, containing a few Montessori characteristics and registration information. Their job is to attract attention and promote further inquiry.



Parental Involvement

In order to realize a successful Montessori Program, parental involvement is encouraged. Parents are urged to assist in whatever way they can to support the program and are asked to communicate with the teacher on a regular basis regarding the progress of their child.

Registration Procedures

Registration is usually on a first-come basis (provided that vacancies are available).

In order to facilitate organization of classes, ***registration of students for the ensuing school term*** should be completed between January-April of the corresponding school year.

Late registrations are accepted provided that room is still available in the program.

The following criteria are considered on registration:

1. Availability of space.
2. Vancouver district students given preference.
3. Sibling(s) in the program.
4. Suitability of the program for the child.
5. Parental commitment to the Montessori program.
6. Previous Montessori experience is not required for children enrolling at Kindergarten and Grade 4 levels.

Registration forms may be obtained at the school offic anytime during regular school hours:

TYEE SCHOOL
3525 Dumfries Street
Vancouver, B.C. V5N 3S5
Phone 875-8397

Prepared by
Information Services
February, 1989

Montessori Alternative Program

"In the words of the child:
I hear and I forget.
I see and I remember.
I do and I understand."

DR. MARIA MONTESSORI
(1879 - 1952)

VSB ***VANCOUVER PUBLIC SCHOOLS***
NO BETTER PLACE TO LEARN!

Montessori Alternative Program

In February 1985, the Vancouver School Board approved the Montessori Alternative Program for a three year pilot which began in September, 1985. This district program was located at Nightingale School until June, 1988. Tyee Elementary became the new site for the program in September 1988, enrolling students from Kindergarten to Grade 4. The program continues to expand.

Historical Perspective & Philosophy

Maria Montessori, born in Italy in 1870, was a pioneer in early childhood education. After becoming Italy's first woman doctor, her interests turned to the education of children and began her lifelong pursuit of studying child development. Her own educational method evolved. The essential elements include the child, a prepared environment and guided use of manipulative learning materials.

Maria Montessori believed that education must be developmental in nature. Her observations indicate that teaching techniques and curriculum materials must be geared to the individual child.

She maintained that under her approach children become self-disciplined, orderly, and joyful about their schooling. Further, she contended that education was accomplished by a child's self-motivation — resulting in an intrinsic natural curiosity and a continued love for the learning process.

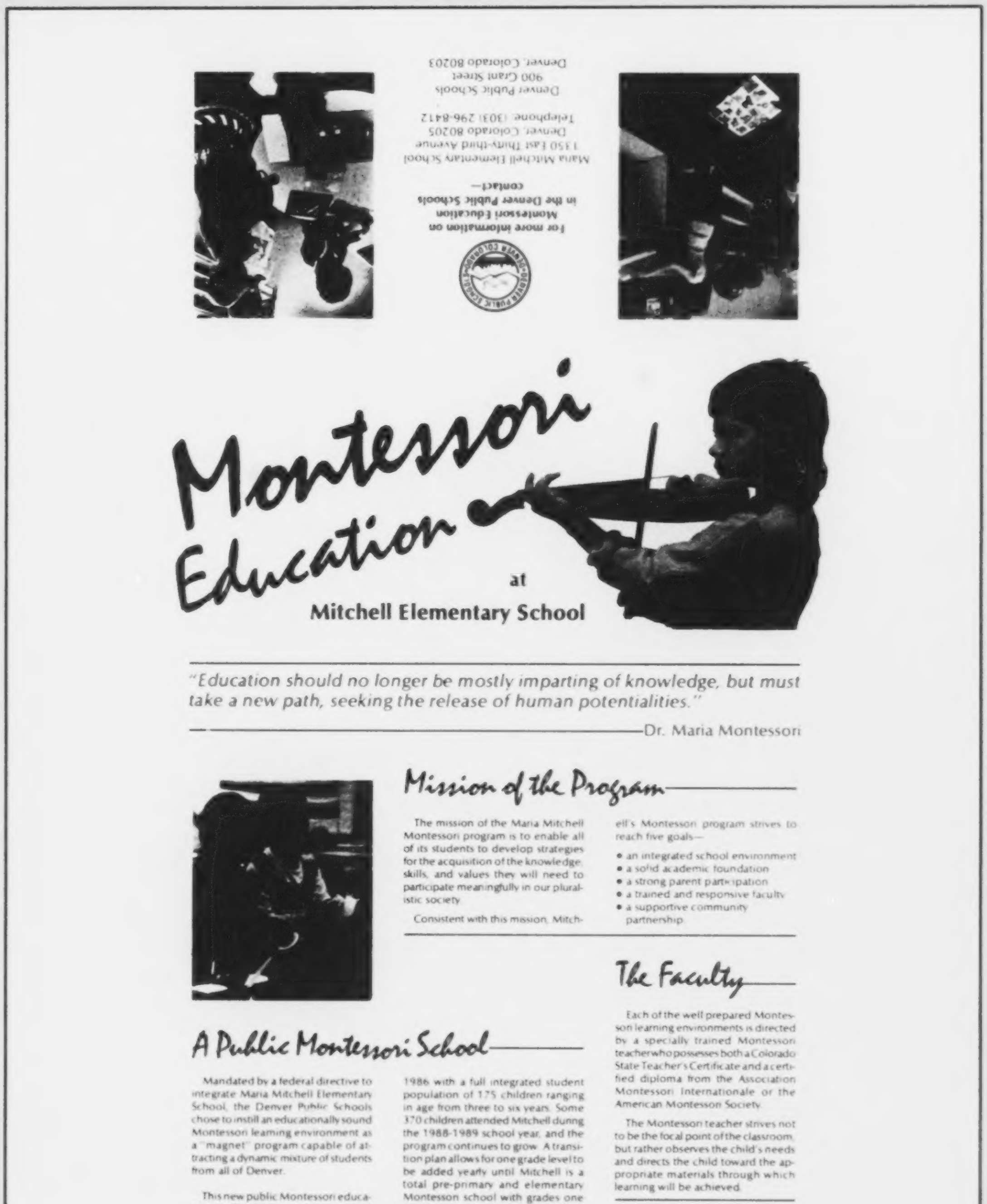
Teacher's Role

Maria Montessori referred to the teacher as a "Directress" or "Director" who ***directs*** or channels the child to pursue his/her educational goals. This procedure follows Montessori's principle that a child learns through experience. The teacher in a Montessori classroom endeavors to fulfill the following roles:

1. to understand and be supportive to the child...
2. to be an observer of the learning atmosphere...
3. to be the initiator of the "prepared environment"...
4. to be an "exemplary" figure for students...
5. to be the key link between the child and the environment...
6. to be the liaison between the child, and the school community...

Some General Principles of Montessori Education

1. It is based upon the belief that a child's natural instinct is to love learning. Children must learn for themselves.
2. It encourages self-discipline through the development of concentration, sequenced learning activities, problem solving opportunities as well as freedom (not license).
3. Opportunities are provided for mutual help within the learning environment (multi-age groups allow the children to learn from one another).
4. A non-competitive atmosphere is encouraged. The children progress at their own rate.



For more information on Montessori Education in the Denver Public Schools contact—

Maria Mitchell Elementary School
1350 East Thirty-third Avenue
Denver, Colorado 80205
Telephone (303) 296-8412

Denver Public Schools
900 Grant Street
Denver, Colorado 80203

Montessori Education at Mitchell Elementary School

"Education should no longer be mostly imparting of knowledge, but must take a new path, seeking the release of human potentialities."

—Dr. Maria Montessori

Mission of the Program

The mission of the Maria Mitchell Montessori program is to enable all of its students to develop strategies for the acquisition of the knowledge, skills, and values they will need to participate meaningfully in our pluralistic society.

Consistent with this mission, Mitchell's Montessori program strives to reach five goals—

- an integrated school environment
- a solid academic foundation
- a strong parent participation
- a trained and responsive faculty
- a supportive community partnership

The Faculty

Each of the well prepared Montessori learning environments is directed by a specially trained Montessori teacher who possesses both a Colorado State Teacher's Certificate and a certified diploma from the Association Montessori Internationale or the American Montessori Society.

The Montessori teacher strives not to be the focal point of the classroom, but rather observes the child's needs and directs the child toward the appropriate materials through which learning will be achieved.

A Public Montessori School

Mandated by a federal directive to integrate Maria Mitchell Elementary School, the Denver Public Schools chose to instill an educationally sound Montessori learning environment as a "magnet" program capable of attracting a dynamic mixture of students from all of Denver.

This new public Montessori educational offering began in the fall of 1986 with a full integrated student population of 175 children ranging in age from three to six years. Some 370 children attended Mitchell during the 1988-1989 school year, and the program continues to grow. A transition plan allows for one grade level to be added yearly until Mitchell is a total pre-primary and elementary Montessori school with grades one through six.

Integrated Enrollment

AGE GROUP	ETHNIC MEMBERSHIP				
	Native American	Black	Asian	Hispanic	Anglo/ Other
3 year olds	—	15	2	15	26
4 year olds	2	17	4	16	27
5 year olds	1	14	4	13	27
6 year olds	1	18	2	17	27
7 year olds	—	11	3	15	41
8 year olds	—	7	1	16	29
Total	4	82	16	92	177
Percent	1	22	4	25	48

Basic Philosophy and Practice

Instead of grouping children in the typical graded structure of one-year age groupings, the Montessori program places children within learning environments that span three years of academic and social development. This creates a more natural learning community in which the younger children can witness the skill development of older classmates, and, in turn, the older learners can exercise leadership by assisting the younger students.

Each of Mitchell's Montessori learning environments is prepared to meet the learning and social needs of each child as an individual. Specially designed and sequenced manipulative materials help isolate skills to be learned and lead the child up the curriculum from mastery to mastery, building self-confidence along the way. Although there are both large and small group activities throughout the day, the child's academic instruction is most often individually presented. Each student, in fact, is carefully observed to assure respect for that child's level of ability and rate of progress.

The Montessori environments are divided into specific learning areas that include practical life, sensorial, language, mathematics, geography, history, science, and the arts. To foster self-motivation and self-discipline, children are allowed to choose any material for work which has been introduced to them by their teacher. They may repeatedly work with the material on their own so that they have the opportunity to discover the underlying concepts and to attain mastery of the skills contained.

Unlike the practice within traditional classrooms, in Mitchell's Montessori learning environments one learner is not compared or paced with others. Each child's academic, emotional, social, artistic, and physical progress is observed and tracked closely by the Montessori teacher.

Rather than depending on textbooks or basal readers, the children within the Montessori program are presented academic skills and knowledge through concrete materials and by using a vast array of reference materials provided within their learning environments and their library/media center.

Grounding the child in open-ended reality experiences fosters the early development of both the imagination and the intuitive mind. Consistent work with the Montessori manipulative materials develops a strong habit of attending to the task at hand as well as the motor control required to pursue their artistic interests.

School Achievements

- ☆ awarded the Certificate of Merit for Academic Achievement by the Black Education Advisory Council in June 1989
- ☆ awarded a $2,000 Federal Grant to further expand Montessori Instructional Media Center Library into areas of botanical and zoological realia exhibits
- ☆ awarded Recognition of Merit for Excellence in Custodial Care and Facility Management for 1988 by the Denver Public Schools
- ☆ adopted as a long-range partner in education by United Airlines, a unique relationship involving United employees, Mitchell's students, staff, and parents
- ☆ regarded as a model for public Montessori education, Mitchell has had over 250 visitors during the past year
- ☆ chosen by the North American Montessori Teachers Association (NAMTA) to be part of a national documentary film depicting model programs of Montessori in public schools
- ☆ hosted three national educational seminars for the Association Montessori Internationale, including the "Assistants to Infancy" two-summer training course for 1989-1990
- ☆ presented an overview of Montessori education in the Denver Public Schools, and its positive impact on the community, to the Colorado Forum
- ☆ developed a Community Garden in partnership with the University of Colorado
- ☆ raised over $4,000 in support of the school's Suzuki violin program and expansion of the instructional media center
- ☆ recorded *no suspensions from school* during the last school year

Accountability

Mitchell Montessori School has an active and involved School Improvement and Accountability Committee. Every Colorado public school is required by law to establish a committee of community members, parents, and school personnel that meets monthly to evaluate existing educational programs and create and suggest a short-range educational plan for the next school year.

During the 1988-1989 school year Mitchell's SIAC conducted a survey of the parent body, the results of which were used to develop a new report card for the elementary program and to create a curriculum plan that will be shared with the parent body and interested educators.

Results also revealed that a full 95 percent of the parents are pleased with their child's educational program and with Mitchell Montessori School.

[illegible]

[illegible]

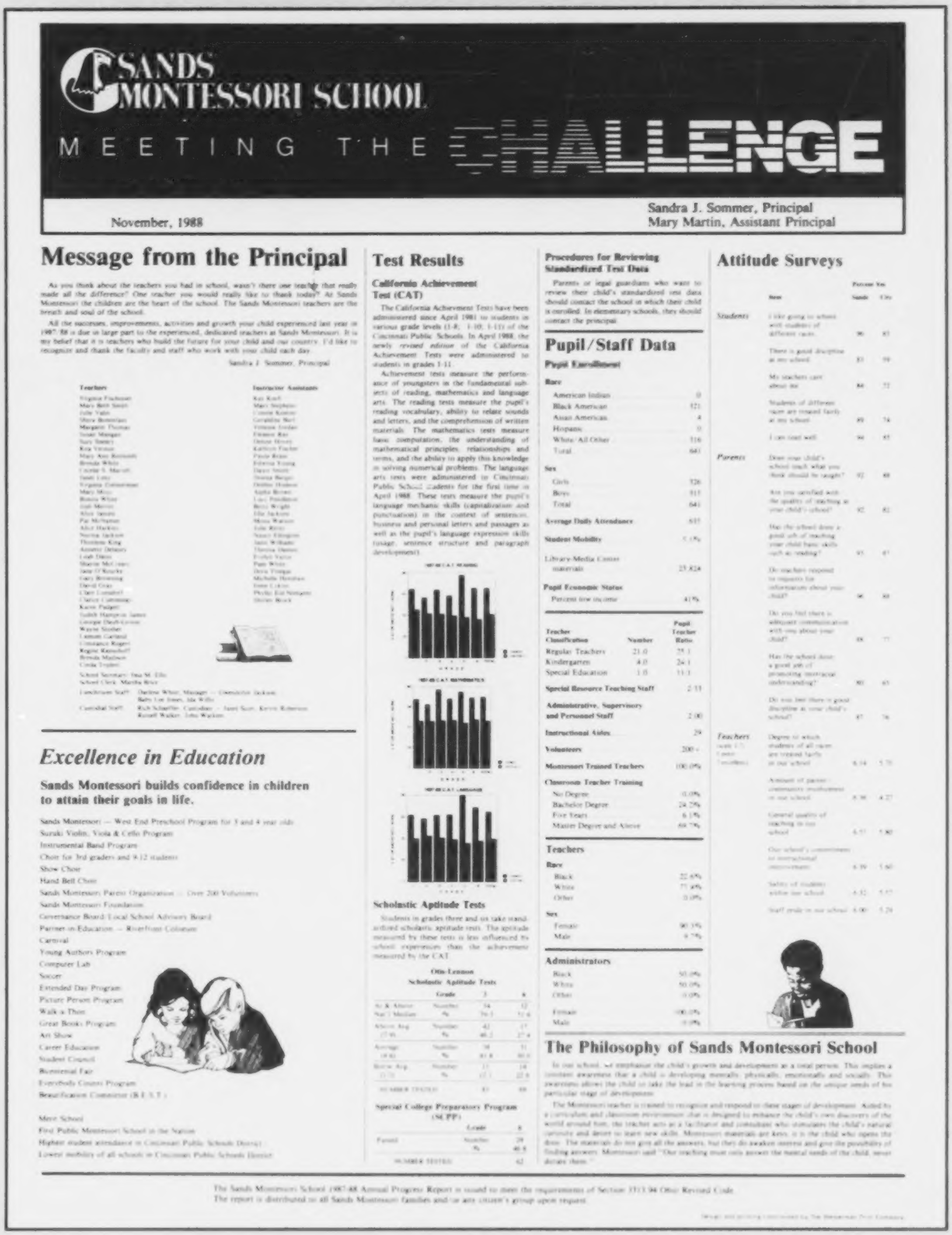
U.S. Postage
PAID

[illegible]

Sands Montessori
MEETING THE CHALLENGE

Appendix 2: Recruitment Wall Poster – Sands Montessori School, Cincinnati, Ohio

A superlative piece of public relations in full, four-color glamour in a standard poster size, this summary of Sands Montessori School activities and achievement leaves an unforgettable impression.



SANDS MONTESSORI SCHOOL

MEETING THE CHALLENGE

November, 1988

Sandra J. Sommer, Principal
Mary Martin, Assistant Principal

Message from the Principal

As you think about the teachers you had in school, wasn't there one teacher that really made all the difference? One teacher you would really like to thank today? At Sands Montessori the children are the heart of the school. The Sands Montessori teachers are the breath and soul of the school.

All the successes, improvements, activities and growth your child experienced last year in 1987-88 is due in large part to the experienced, dedicated teachers at Sands Montessori. It is my belief that it is teachers who build the future for your child and our country. I'd like to recognize and thank the faculty and staff who work with your child each day.

Sandra J. Sommer, Principal

Teachers **Instructor Assistants**

Excellence in Education

Sands Montessori builds confidence in children to attain their goals in life.

Sands Montessori — West End Preschool Program for 3 and 4 year olds
Suzuki Violin, Viola & Cello Program
Instrumental Band Program
Choir for 3rd graders and 9-12 students
Show Choir
Hand Bell Choir
Sands Montessori Parent Organization — Over 200 Volunteers
Sands Montessori Foundation
Governance Board/Local School Advisory Board
Partner in Education — Riverfront Coliseum
Carnival
Young Authors Program
Computer Lab
Soccer
Extended Day Program
Picture Person Program
Walk-a-Thon
Great Books Program
Art Show
Career Education
Student Council
Bicentennial Fair
Everybody Counts Program
Beautification Committee (B.E.S.T.)

Merit School
First Public Montessori School in the Nation
Highest student attendance in Cincinnati Public Schools District
Lowest mobility of all schools in Cincinnati Public Schools District

Test Results

California Achievement Test (CAT)

The California Achievement Tests have been administered since April 1981 to students in various grade levels (1-8; 1-10; 1-11) of the Cincinnati Public Schools. In April 1988, the newly *revised edition* of the California Achievement Tests were administered to students in grades 1-11.

Achievement tests measure the performance of youngsters in the fundamental subjects of reading, mathematics and language arts. The reading tests measure the pupil's reading vocabulary, ability to relate sounds and letters, and the comprehension of written materials. The mathematics tests measure basic computation, the understanding of mathematical principles, relationships and terms, and the ability to apply this knowledge in solving numerical problems. The language arts tests were administered to Cincinnati Public School students for the first time in April 1988. These tests measure the pupil's language mechanic skills (capitalization and punctuation) in the context of sentences, business and personal letters and passages as well as the pupil's language expression skills (usage, sentence structure and paragraph development).

Scholastic Aptitude Tests

Students in grades three and six take standardized scholastic aptitude tests. The aptitude measured by these tests is less influenced by school experiences than the achievement measured by the CAT.

Otis-Lennon Scholastic Aptitude Tests

	Grade	3	6
At & Above Nat'l Median	Number	34	12
	%	[illegible]	[illegible]
Above Avg. (7-9)	Number	42	17
	%	46.2	27.4
Average (4-6)	Number	38	31
	%	41.8	50.0
Below Avg. (1-3)	Number	11	14
	%	12.1	22.6
NUMBER TESTED		91	62

Special College Preparatory Program (SCPP)

	Grade	6
Passed	Number	29
	%	46.8
NUMBER TESTED		62

Procedures for Reviewing Standardized Test Data

Parents or legal guardians who want to review their child's standardized test data should contact the school in which their child is enrolled. In elementary schools, they should contact the principal.

Pupil/Staff Data

Pupil Enrollment

Race

American Indian	0
Black American	321
Asian American	4
Hispanic	0
White/All Other	316
Total	641

Sex

Girls	326
Boys	315
Total	641

Average Daily Attendance	615
Student Mobility	[illegible]
Library-Media Center materials	25,824

Pupil Economic Status

Percent low income	41%

Teacher Classification	Number	Pupil Teacher Ratio
Regular Teachers	21.0	25:1
Kindergarten	4.0	24:1
Special Education	1.0	11:1

Special Resource Teaching Staff	2.33
Administrative, Supervisory and Personnel Staff	2.00
Instructional Aides	29
Volunteers	200+
Montessori Trained Teachers	100.0%

Classroom Teacher Training

No Degree	0.0%
Bachelor Degree	24.2%
Five Years	6.1%
Master Degree and Above	69.7%

Teachers

Race

Black	22.6%
White	77.4%
Other	0.0%

Sex

Female	90.3%
Male	9.7%

Administrators

Black	50.0%
White	50.0%
Other	0.0%
Female	100.0%
Male	0.0%

Attitude Surveys

	Item	Percent Yes Sands	Percent Yes City
Students	I like going to school with students of different races.	96	83
	There is good discipline at my school.	83	59
	My teachers care about me.	84	72
	Students of different races are treated fairly at my school.	89	74
	I can read well.	94	85
Parents	Does your child's school teach what you think should be taught?	92	88
	Are you satisfied with the quality of teaching at your child's school?	92	82
	Has the school done a good job of teaching your child basic skills such as reading?	93	87
	Do teachers respond to requests for information about your child?	96	88
	Do you feel there is adequate communication with you about your child?	88	77
	Has the school done a good job of promoting interracial understanding?	80	65
	Do you feel there is good discipline at your child's school?	87	76
Teachers (scale 1-7, 1 poor, 7 excellent)	Degree to which students of all races are treated fairly in our school	6.14	5.75
	Amount of parent-community involvement in our school	6.36	4.27
	General quality of teaching in our school	6.57	5.80
	Our school's commitment to instructional improvement	6.39	5.60
	Safety of students within our school	6.32	5.57
	Staff pride in our school	6.00	5.24

The Philosophy of Sands Montessori School

In our school, we emphasize the child's growth and development as a total person. This implies a constant awareness that a child is developing mentally, physically, emotionally and socially. This awareness allows the child to take the lead in the learning process based on the unique needs of his particular stage of development.

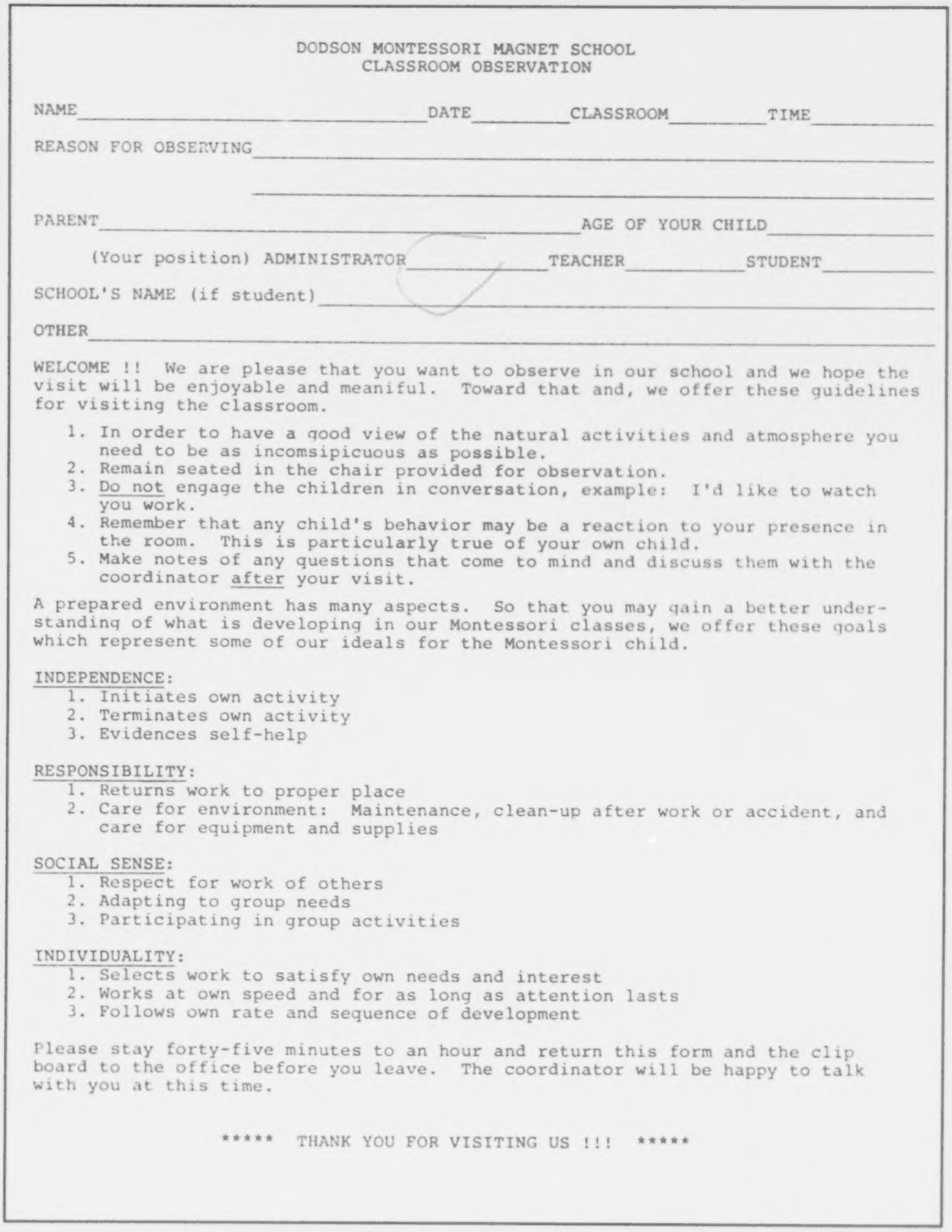
The Montessori teacher is trained to recognize and respond to these stages of development. Aided by a curriculum and classroom environment that is designed to enhance the child's own discovery of the world around him, the teacher acts as a facilitator and consultant who stimulates the child's natural curiosity and desire to learn new skills. Montessori materials are keys; it is the child who opens the door. The materials do not give all the answers, but they do awaken interest and give the possibility of finding answers. Montessori said "Our teaching must only answer the mental needs of the child, never dictate them."

The Sands Montessori School 1987-88 Annual Progress Report is issued to meet the requirements of Section 3313.94 Ohio Revised Code.
The report is distributed to all Sands Montessori families and/or any citizen's group upon request.

Design and printing contributed by The [illegible] Company

Appendix 3: Observation Form — Dodson Montessori School, Houston, Texas

A registration for classroom observations with some simple rules and blank spaces for feedback from the visitor.



DODSON MONTESSORI MAGNET SCHOOL
CLASSROOM OBSERVATION

NAME____________________ DATE________ CLASSROOM________ TIME________

REASON FOR OBSERVING______________________________

____

PARENT________________________ AGE OF YOUR CHILD________

(Your position) ADMINISTRATOR________ TEACHER________ STUDENT________

SCHOOL'S NAME (if student)________________________

OTHER____________________________________

WELCOME !! We are please that you want to observe in our school and we hope the visit will be enjoyable and meaniful. Toward that and, we offer these guidelines for visiting the classroom.

1. In order to have a good view of the natural activities and atmosphere you need to be as incomsipicuous as possible.
2. Remain seated in the chair provided for observation.
3. Do not engage the children in conversation, example: I'd like to watch you work.
4. Remember that any child's behavior may be a reaction to your presence in the room. This is particularly true of your own child.
5. Make notes of any questions that come to mind and discuss them with the coordinator after your visit.

A prepared environment has many aspects. So that you may gain a better understanding of what is developing in our Montessori classes, we offer these goals which represent some of our ideals for the Montessori child.

INDEPENDENCE:
1. Initiates own activity
2. Terminates own activity
3. Evidences self-help

RESPONSIBILITY:
1. Returns work to proper place
2. Care for environment: Maintenance, clean-up after work or accident, and care for equipment and supplies

SOCIAL SENSE:
1. Respect for work of others
2. Adapting to group needs
3. Participating in group activities

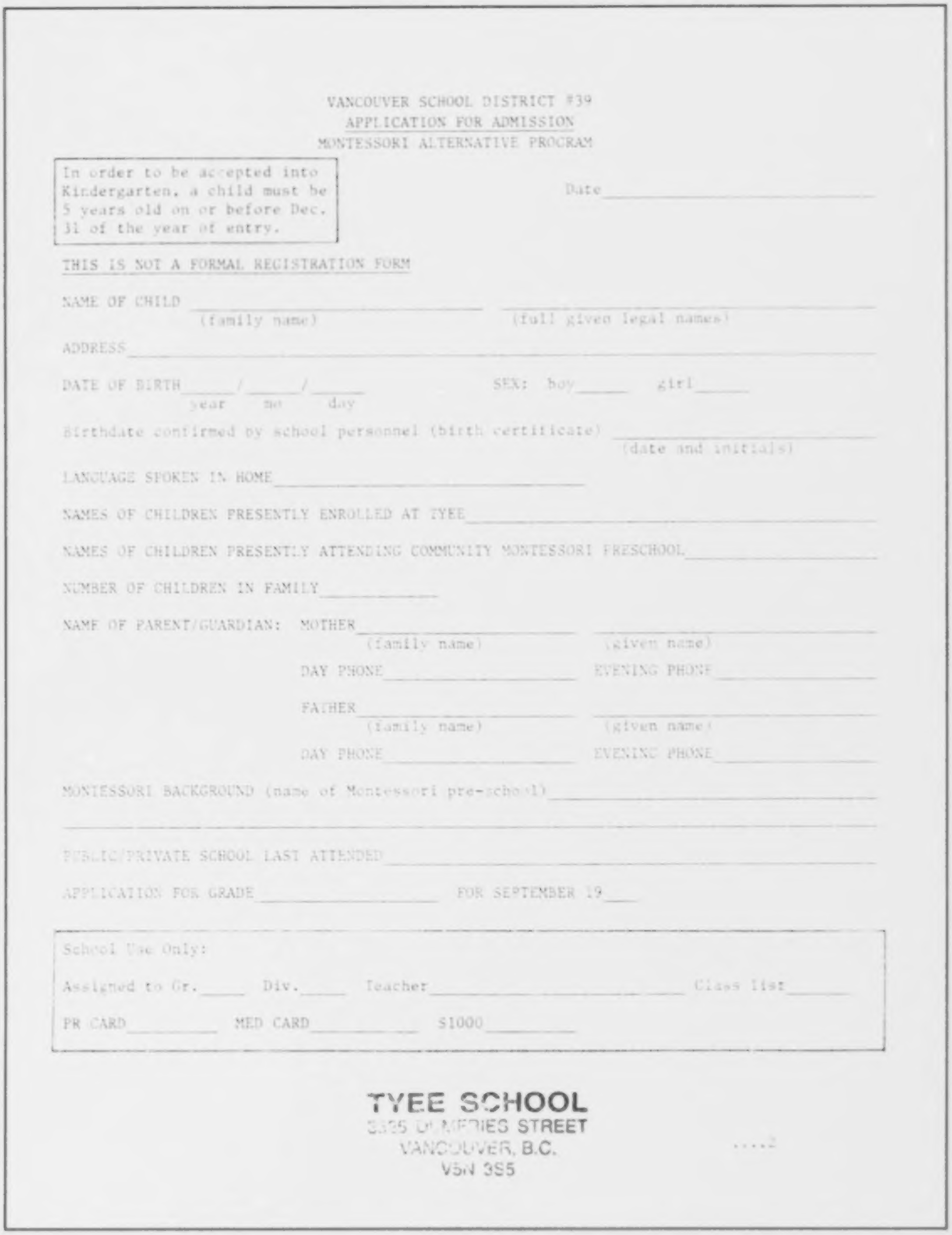
INDIVIDUALITY:
1. Selects work to satisfy own needs and interest
2. Works at own speed and for as long as attention lasts
3. Follows own rate and sequence of development

Please stay forty-five minutes to an hour and return this form and the clip board to the office before you leave. The coordinator will be happy to talk with you at this time.

***** THANK YOU FOR VISITING US !!! *****

Appendix 4: Application Form — Tyee School, Vancouver, British Columbia

Application forms should be simple and straight forward.



VANCOUVER SCHOOL DISTRICT #39
APPLICATION FOR ADMISSION
MONTESSORI ALTERNATIVE PROGRAM

In order to be accepted into Kindergarten, a child must be 5 years old on or before Dec. 31 of the year of entry.

Date ____________________

THIS IS NOT A FORMAL REGISTRATION FORM

NAME OF CHILD ____________________ (family name) ____________________ (full given legal names)

ADDRESS ____

DATE OF BIRTH _____ / _____ / _____ (year / mo / day) SEX: boy _____ girl _____

Birthdate confirmed by school personnel (birth certificate) ____________________ (date and initials)

LANGUAGE SPOKEN IN HOME ____________________

NAMES OF CHILDREN PRESENTLY ENROLLED AT TYEE ____________________

NAMES OF CHILDREN PRESENTLY ATTENDING COMMUNITY MONTESSORI PRESCHOOL ____________________

NUMBER OF CHILDREN IN FAMILY __________

NAME OF PARENT/GUARDIAN: MOTHER ____________________ (family name) ____________________ (given name)
DAY PHONE ____________________ EVENING PHONE ____________________
FATHER ____________________ (family name) ____________________ (given name)
DAY PHONE ____________________ EVENING PHONE ____________________

MONTESSORI BACKGROUND (name of Montessori pre-school) ____________________
____

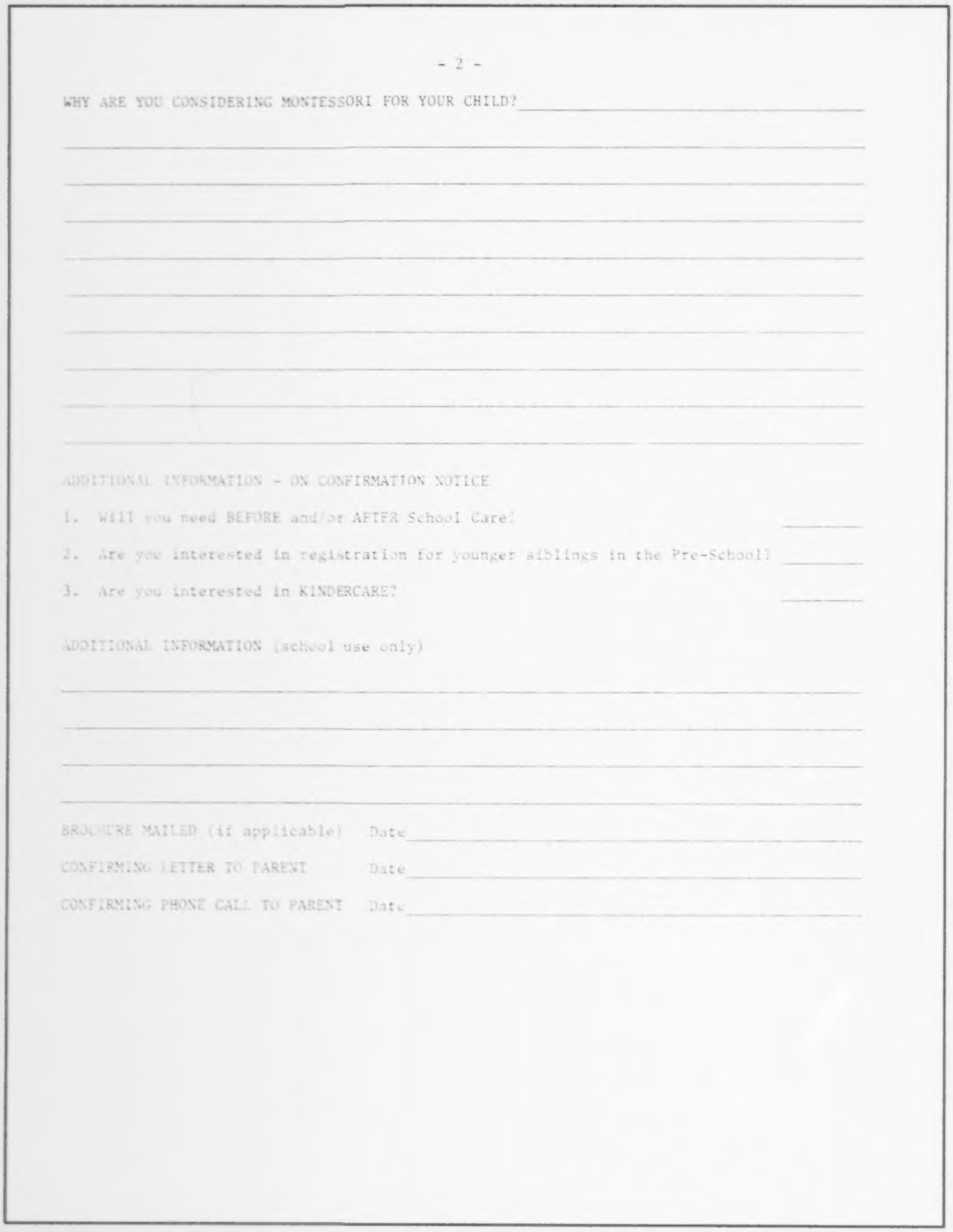
PUBLIC/PRIVATE SCHOOL LAST ATTENDED ____________________

APPLICATION FOR GRADE ______________ FOR SEPTEMBER 19___

School Use Only:
Assigned to Gr. _____ Div. _____ Teacher ____________________ Class list _____
PR CARD _________ MED CARD _________ $1000 _________

TYEE SCHOOL
3525 DUMFRIES STREET
VANCOUVER, B.C.
V5N 3S5

....2



- 2 -

WHY ARE YOU CONSIDERING MONTESSORI FOR YOUR CHILD? ____________

ADDITIONAL INFORMATION - ON CONFIRMATION NOTICE

1. Will you need BEFORE and/or AFTER School Care? ________
2. Are you interested in registration for younger siblings in the Pre-School? ________
3. Are you interested in KINDERCARE? ________

ADDITIONAL INFORMATION (school use only)

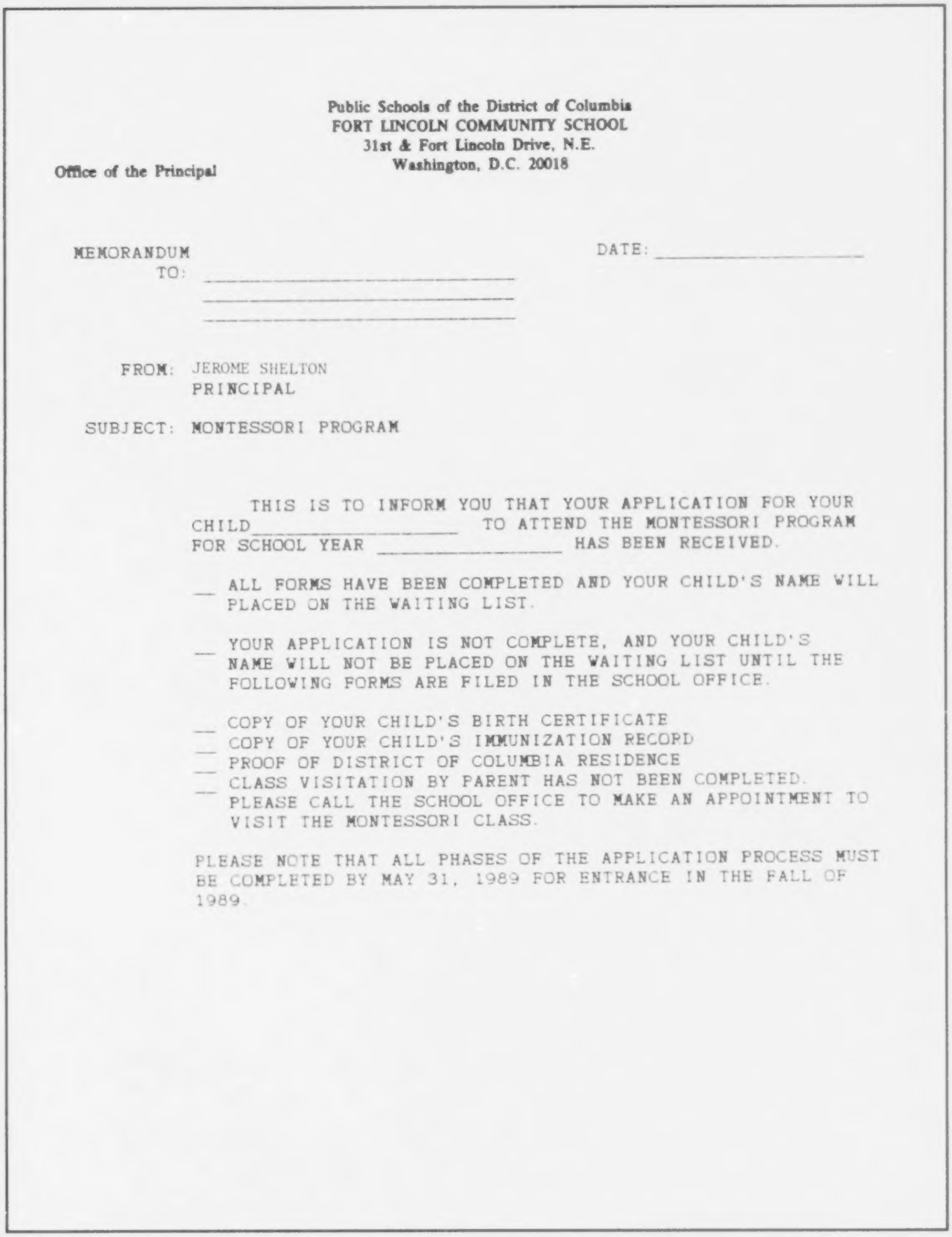
BROCHURE MAILED (if applicable) Date ____________

CONFIRMING LETTER TO PARENT Date ____________

CONFIRMING PHONE CALL TO PARENT Date ____________

Appendix 5: Application Confirmation Forms, Fort Lincoln Community School, Washington, D.C.

Follow-up checklists are usually necessary to the completion of the admissions process.



Public Schools of the District of Columbia
FORT LINCOLN COMMUNITY SCHOOL
31st & Fort Lincoln Drive, N.E.
Washington, D.C. 20018

Office of the Principal

MEMORANDUM
TO: ______________________
____
____

DATE: ______________

FROM: JEROME SHELTON
PRINCIPAL

SUBJECT: MONTESSORI PROGRAM

THIS IS TO INFORM YOU THAT YOUR APPLICATION FOR YOUR CHILD______________ TO ATTEND THE MONTESSORI PROGRAM FOR SCHOOL YEAR ____________ HAS BEEN RECEIVED.

__ ALL FORMS HAVE BEEN COMPLETED AND YOUR CHILD'S NAME WILL PLACED ON THE WAITING LIST.

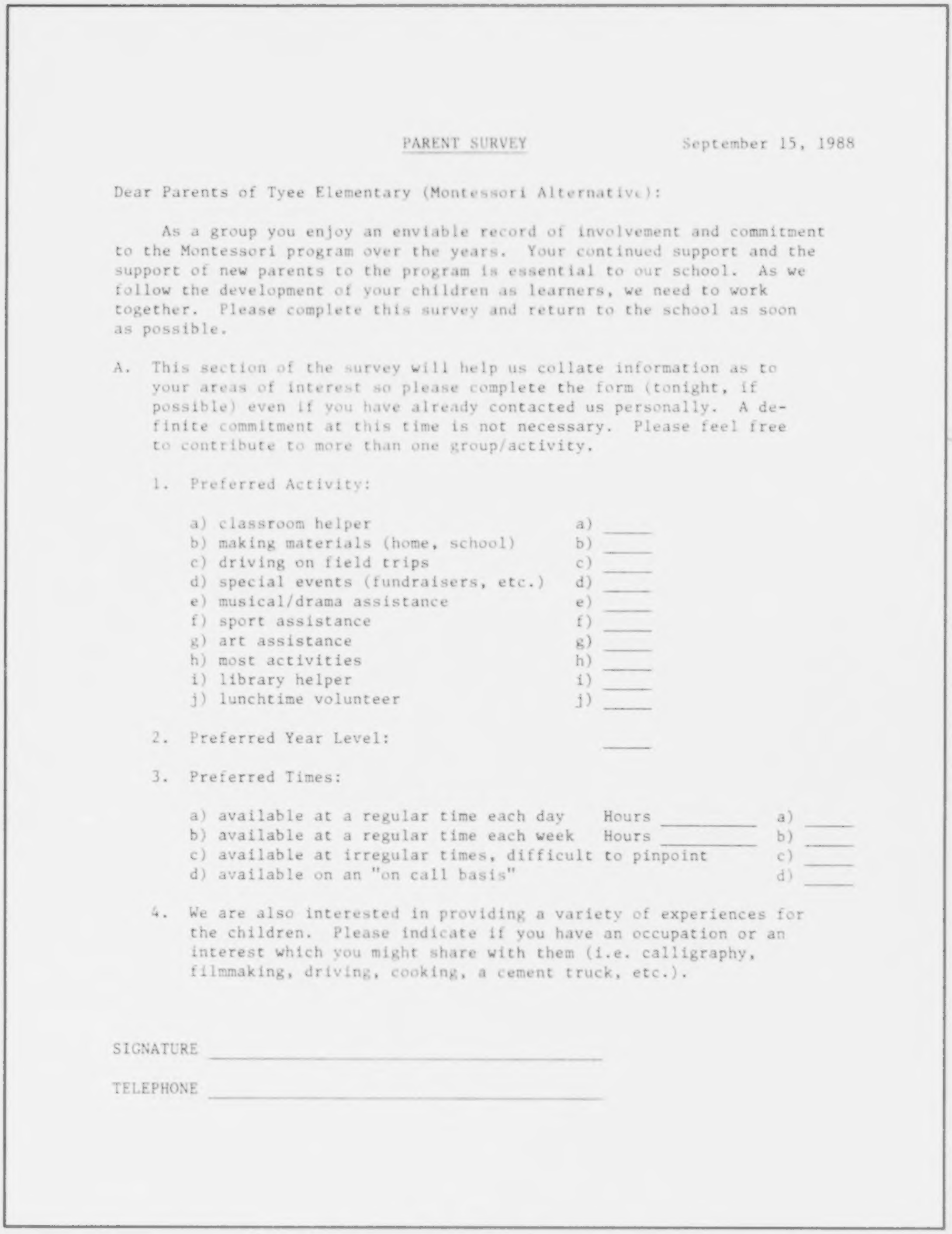
__ YOUR APPLICATION IS NOT COMPLETE, AND YOUR CHILD'S NAME WILL NOT BE PLACED ON THE WAITING LIST UNTIL THE FOLLOWING FORMS ARE FILED IN THE SCHOOL OFFICE.

__ COPY OF YOUR CHILD'S BIRTH CERTIFICATE
__ COPY OF YOUR CHILD'S IMMUNIZATION RECORD
__ PROOF OF DISTRICT OF COLUMBIA RESIDENCE
__ CLASS VISITATION BY PARENT HAS NOT BEEN COMPLETED. PLEASE CALL THE SCHOOL OFFICE TO MAKE AN APPOINTMENT TO VISIT THE MONTESSORI CLASS.

PLEASE NOTE THAT ALL PHASES OF THE APPLICATION PROCESS MUST BE COMPLETED BY MAY 31, 1989 FOR ENTRANCE IN THE FALL OF 1989.

Appendix 6: Parent Survey — Tyee School, Vancouver, British Columbia

A parent involvement survey form provided during the admissions process reminds prospective applicants from the outset that participating in school activities is expected.



PARENT SURVEY September 15, 1988

Dear Parents of Tyee Elementary (Montessori Alternative):

As a group you enjoy an enviable record of involvement and commitment to the Montessori program over the years. Your continued support and the support of new parents to the program is essential to our school. As we follow the development of your children as learners, we need to work together. Please complete this survey and return to the school as soon as possible.

A. This section of the survey will help us collate information as to your areas of interest so please complete the form (tonight, if possible) even if you have already contacted us personally. A definite commitment at this time is not necessary. Please feel free to contribute to more than one group/activity.

1. Preferred Activity:

a) classroom helper a) _____
b) making materials (home, school) b) _____
c) driving on field trips c) _____
d) special events (fundraisers, etc.) d) _____
e) musical/drama assistance e) _____
f) sport assistance f) _____
g) art assistance g) _____
h) most activities h) _____
i) library helper i) _____
j) lunchtime volunteer j) _____

2. Preferred Year Level: _____

3. Preferred Times:

a) available at a regular time each day Hours __________ a) _____
b) available at a regular time each week Hours __________ b) _____
c) available at irregular times, difficult to pinpoint c) _____
d) available on an "on call basis" d) _____

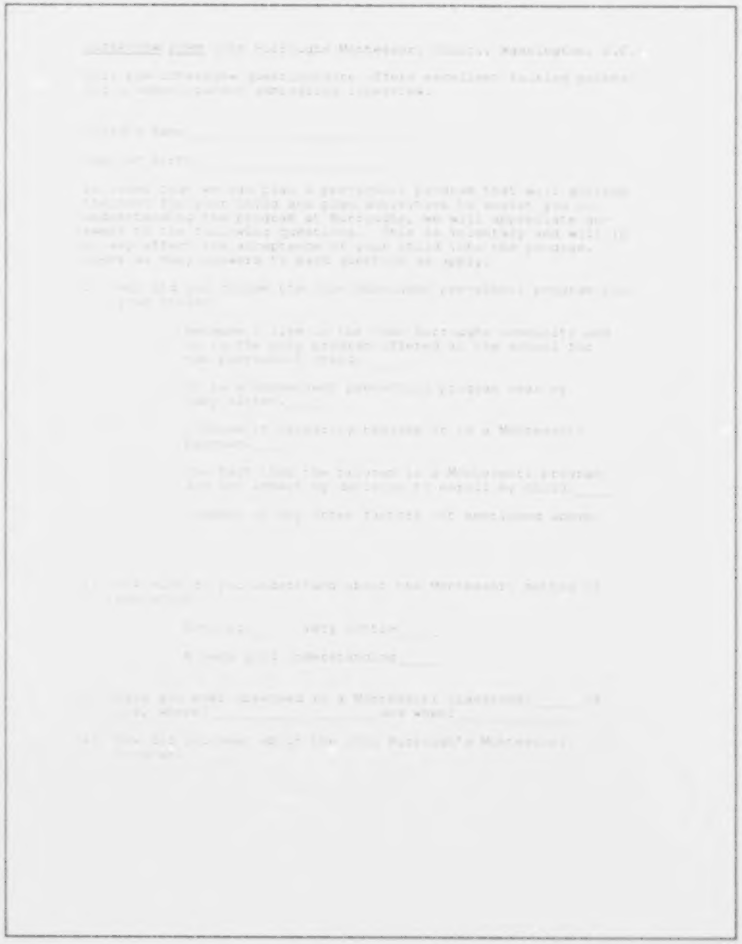
4. We are also interested in providing a variety of experiences for the children. Please indicate if you have an occupation or an interest which you might share with them (i.e. calligraphy, filmmaking, driving, cooking, a cement truck, etc.).

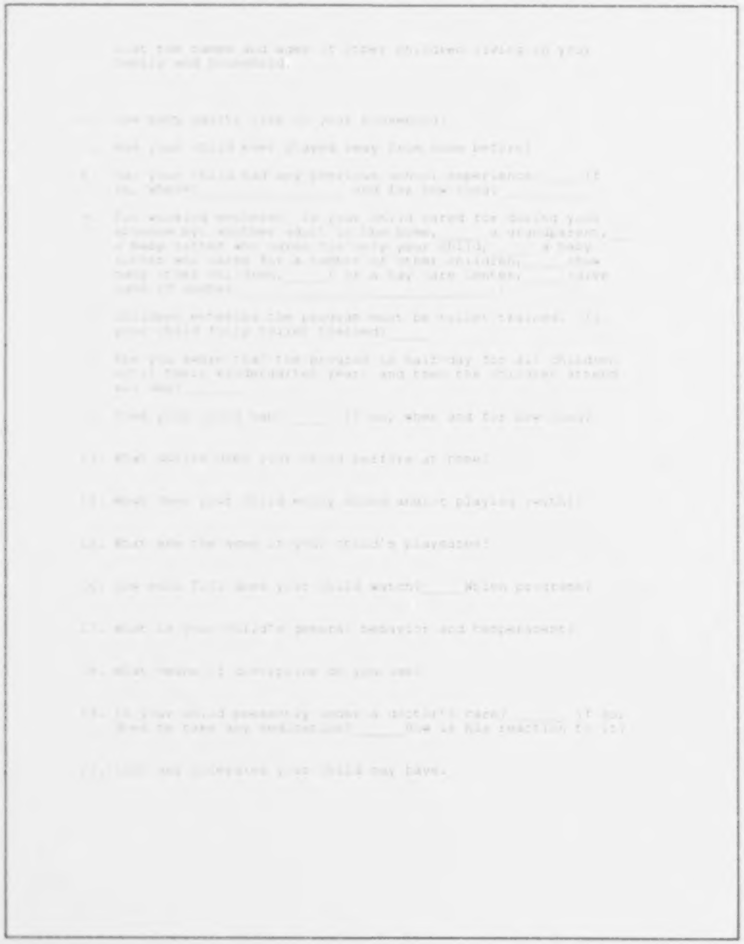
SIGNATURE ______________________________

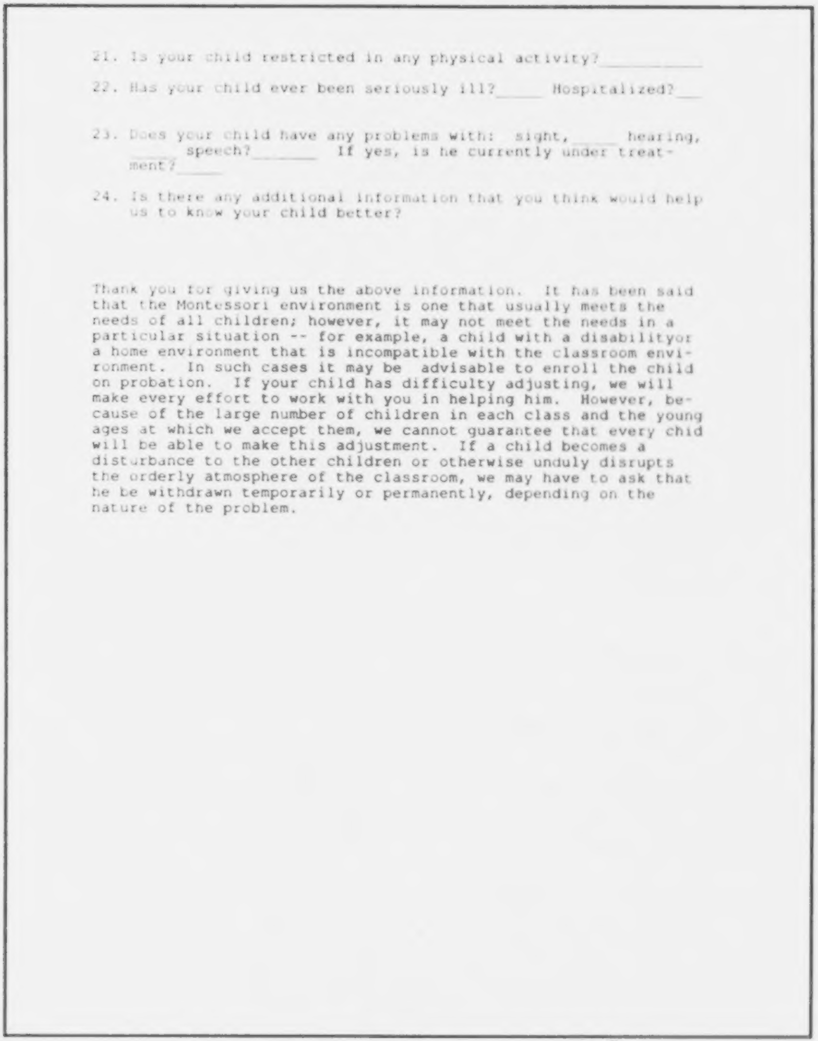
TELEPHONE ______________________________

Appendix 7: Interview Form — John Burrough's Montessori School, Washington, D.C.

This pre-interview questionnaire offers excellent talking points for a school-parent admissions interview.







21. Is your child restricted in any physical activity?___________

22. Has your child ever been seriously ill?_____ Hospitalized?___

23. Does your child have any problems with: sight,_____ hearing, _____ speech?_______ If yes, is he currently under treatment?_____

24. Is there any additional information that you think would help us to know your child better?

Thank you for giving us the above information. It has been said that the Montessori environment is one that usually meets the needs of all children; however, it may not meet the needs in a particular situation -- for example, a child with a disabilityor a home environment that is incompatible with the classroom environment. In such cases it may be advisable to enroll the child on probation. If your child has difficulty adjusting, we will make every effort to work with you in helping him. However, because of the large number of children in each class and the young ages at which we accept them, we cannot guarantee that every chid will be able to make this adjustment. If a child becomes a disturbance to the other children or otherwise unduly disrupts the orderly atmosphere of the classroom, we may have to ask that he be withdrawn temporarily or permanently, depending on the nature of the problem.

PARENT INVOLVEMENT

THE CHILDREARING MODEL

AFTER SCHOOL ACTIVITIES

DISCIPLINE

CLASSROOM TOUR

TELEVISION

NUTRITION

SCHOOL MODELS

AT-RISK FAMILIES

Research has shown repeatedly that parent involvement correlates with student achievement. To win parents over, the school must communicate clear understandings about Montessori pedagogy and philosophy through media and meetings so that the home can play the vital role needed to complement Montessori education. The Montessori magnet school builds community through decision making and goal setting established by parents working with administrators and teachers (Advisory Councils).

THE CHILDREARING MODEL

PARENT INVOLVEMENT

MONTESSORI: THE CHILDREARING MODEL

The family is the center of human development. Montessori has, implicit within its philosophy, a school-based family support program which promotes child development ideas in the home.

THE PREVENTIVE MODEL

Montessori is a **developmental model.** It takes into consideration the extreme sensitivity of the child to the actions and expectations of the adult. The principle is that the child wishes to be in the company of the adult, to imitate the adult's voice and actions, to belong to the community.

Many times, there are attempts to supersede the sensitive balance of Montessori discipline by introducing different discipline programs including *Parent Effectiveness Training, Faber-Mazlish-Ginott, Dreikurs, Assertive Discipline, Positive Parenting,* etc. However, as part of its comprehensive plan, Montessori has a distinctive discipline mode which it uses to help the child become more self-motivated in the classroom.

Most parents have been raised in the **habit mode.** This might be described as controlling the impulses of the child and directing the child's behavior through rewards and punishments.

In contrast to the **habit mode,** the adult in Montessori education works in a **helping mode.** The adult assumes that the child has the innate tendency to find a level of activity at each stage of development. Parents, then, receive training by the Montessori school in methods to aid the child in expanding activity while the parents observe from the sidelines.

Traditional **(Habit Mode)**	***Montessori*** **(Helping Mode)**
1. Correct the child's behavior, or misbehavior will persist.	1. Consider the emotions, fears, reactions, and anticipations of the child.
2. Social training is necessary in order to complete proper development of the child.	2. Children have a natural ability to self-perfect, to learn.
3. Children need to be dominated in order to obey. Punishment and reward are effective motivators.	3. Children obey out of love.

It is important to convey Montessori discipline and its parts to parents: freedom of activity, choice, adult intervention and its limits, observation, responsibility, and perception. One frequently utilized technique in a group meeting is the discussion of the child's point of view. Regular meetings can bring the collective wisdom of the group to bear on everyday problems, providing they are described concretely to the group. Bedtime, dinner, getting ready in the morning, taking responsibility for chores, putting toys away, all are practical issues which often can be solved by using the **helping mode** — looking at the child's need for independent activity and simultaneous adult involvement. The independence of the child does not imply abandonment by the adult, but rather interdependent community functioning.

PARENT INVOLVEMENT

MONTESSORI THEMES FOR PARENTS

The Montessori educational system works best with the involvement and understanding of parents. It is for this reason that parent education is such an important part of its pedagogical design. The style of discipline, the non-competitive approach, the order of the prepared environment, and the exploratory independent work need the enlightened involvement of the home. The following themes provide the framework for a well-rounded parent education program and exert *the highest expectations* on the parent's role:

The Child's Prepared Environment

The home can be adapted so that the child can participate in the activities of the household. "A child's corner" in every room allows the child to coexist with the adult while maintaining his or her own activities.

Discipline

The child works in order to belong to a community and needs to be supported in activities which enhance development. We must *model* attitudes and activities for children and show them how to cultivate a friendly feeling towards error. Rewards and punishment offend the spirit and are external to true discipline. Independence should be a natural outcome of discipline.

Language

The child absorbs the language of the environment — the names and classification of living and non-living objects in the world. Language can be presented to the child in ways which enhance confidence, expression, and interpretation. There are ways to encourage the thinking and responsiveness of the child that the parents can use in the home to complement the work of the school.

Literature

Literature is part of our culture that can enhance development in different ways depending on the particular stage of development. Selected books should be in the environment and read regularly.

The Child in Nature

The relationship of the child to nature is at the same time sensorial, linguistic, scientific, and can result in a fundamental sense of identity — sexual, human, and ecological.

Movement

Movement is indispensable to development, both mental and physical. It is manifest in all aspects of learning; it is an antidote for passivity, and it is the key to early self-confidence and productivity.

Television

Television watching in any amount means a reduction of movement, language, reading, and real experiences. The very nature of the television experience, whatever the content of a program, can have detrimental effects, especially for children under six.

THE CHILDREARING MODEL

PARENT INVOLVEMENT

Food Habits and Nutrition

A variety of good foods, arranged so that the child can choose what to eat, will build good eating habits and better human relations naturally. A child needs to be included in as many facets of meal selection, preparation, and clean-up as possible.

Montessori Pedagogy in the Home

In order for parents to participate in the learning experiences of their children, it is essential that they be informed regarding the special classroom materials and philosophy of Montessori education. Suggested areas of programming are: the three period lesson, asking questions, the academic areas, handwriting, the initial sounds, how to read with a child, memorization of math facts, the meaning of self-motivation and interest, the relationship of the whole to detail, the skills of research and the differences between toys and Montessori materials — the latter incorporating qualities of isolation of the difficulty, sensorial discrimination, and aesthetic qualities.

Prepared by David Kahn, © 1989

Appendix 1: Suggestions for Activities for the Preschool Child — John Burroughs Public School, Washington, D.C.

A quick orientation for parents who may need basic guidance on being available to their children.

Plan one field trip a week, and keep in mind the child tires so that there should be a time limit. If you are going to the museum, cover only the area of one subject such as the insect zoo or the mammals or one section of the art museum, etc.

Teach your child his/her telephone number, address, first names of parents, school, city, state, county, continent, church, etc.

Firm up the concept of left and right.

Review sounds of letters and play spelling games using sounds and not names of letters (do not use the names of the letters until your child is already reading and can no longer be confused). Use the word list that came home and make up words on cards to learn. With the cards, he/she can label things around the house.

Review numbers and play counting games (cracks in the walk, telephone poles passed, etc.) Count by ones, fives, twos, tens.

Take many discovery walks. Listen for sounds of nature, look at cloud formations, flowers that are blooming, bugs that are crawling, etc.

Refer to the clock throughout the day and talk about time concepts.

Learn poems and songs from records.

Make collections: leaves, rocks, shells, seeds, etc.

Write short simple stories together. For the younger child, you can do the writing and the child can give you the ideas.

Color and do art work.

Play simple games:

Play listening and directional games--give 1 direction at a time; then 2, then 3--to develop movement and then concentration.

Play classification games, i.e., "Let's name...mammals; insects; birds; action words; color words; words that describe; words that tell is it a person, place or thing; shapes; leaves; monuments; cars; etc.

AND last but not least, talk a lot with your child, become his/her best friend, and have a lot of fun with him/her. Do not let the vacation time become a time of pressure. Learning is fun. If you find that you are not having fun, then most likely your child is not having fun and you had better stop the project because nothing is being accomplished. Allow your child a lot of time to do his/her projects. He/she is learning and his/her pace is certainly much slower than yours. When demonstrating how to do something, isolate the steps and show them one by one, deliberately and quietly. Giving verbal directions may only confuse your child when he/she is watching you. Never take too much for granted. Show your child first, and then let him/her do it.

SUGGESTIONS FOR ACTIVITIES FOR THE PRESCHOOL CHILD

INTRODUCTION

Make FREQUENT trips to the library for books and read AT LEAST one book to your child every day. Discuss the book when you are finished and review the vocabulary in the book. Repeat vocabulary during the week to be sure concepts are clear. Some books that are loved and special should be read many many times during the summer. Although you may tire of the same book, your child never will. Please read only factual and true-to-life stories--NO fairy tales or fantasy books until the child reaches a mature 5 or 6 years old.

Be selective about TV viewing. A preschool child should not watch more than a total of one hour of TV a day. It is preferable that he watch NO TV unless there is a very special program. Do not let the TV become your babysitter.

Suggestions for activities (chores) around the house:

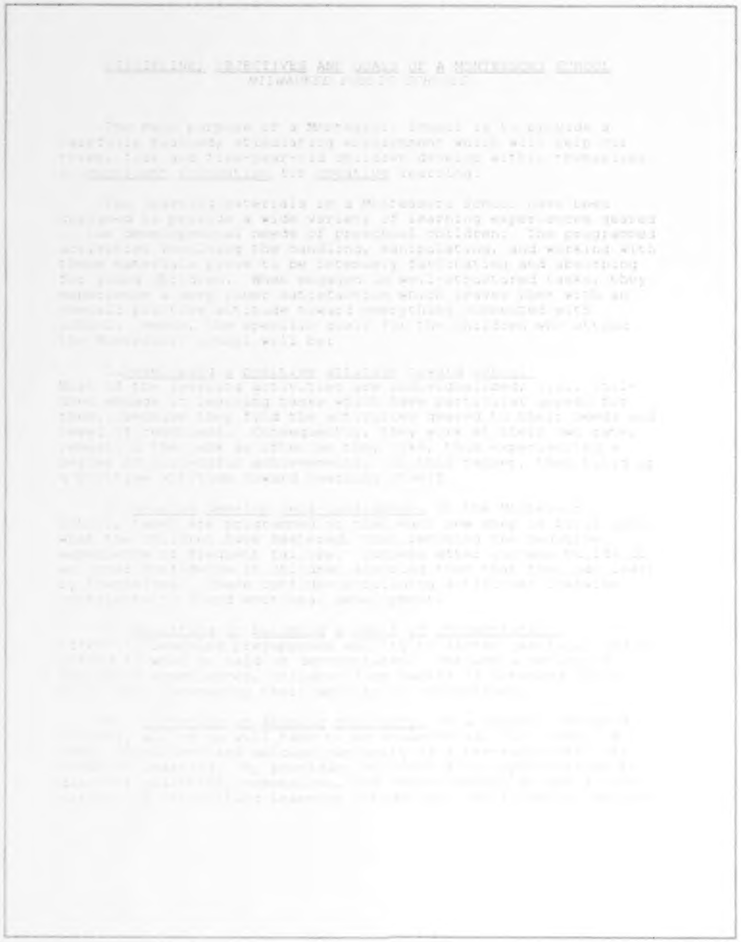
setting and clearing the table
filling salt shakers and sugar bowls
cleaning sinks
dusting and polishing furniture
sorting silverware from dishwasher
emptying waste baskets
making beds
folding laundry
ironing small pieces of laundry
washing certain dirty toys (i.e., scrub a doll)
straightening books
pouring drinks
making simple lunches (i.e., toast, spreading peanut butter)
scrubbing tires while parent washes car
cutting paper--making a book of special pictures cut from
 old magazines
planting and weeding a garden
picking and arranging flowers

Involve the child in your projects, especially cooking, and give him/her the language of measurement -- i.e., eggs by the dozen count 12, ounce, pound, cup, quart, gallon, etc.

Be sure to include your child on your shopping trips and talk about the things you see. Familiarize him/her with the names of fruits and vegetables, especially those which you may not necessarily buy, but he/she should at least know the name, smell, texture, etc.

Appendix 2: Discipline: Objectives and Goals of a Montessori School — Milwaukee Public Schools, Milwaukee, Wisconsin

A very nice encapsulation of the Montessori approach to psychology, discipline, and ground rules for parents and teachers.



DISCIPLINE: OBJECTIVES AND GOALS OF A MONTESSORI SCHOOL
MILWAUKEE PUBLIC SCHOOLS

The main purpose of a Montessori School is to provide a carefully planned, stimulating environment which will help the three, four and five-year-old children develop within themselves a foundation for creative learning.

The learning materials in a Montessori School have been designed to provide a wide variety of learning experiences geared to the developmental needs of preschool children. The programmed activities involving the handling, manipulating, and working with these materials prove to be intensely fascinating and absorbing for young children. When engaged in well-structured tasks, they experience a deep inner satisfaction which leaves them with an overall positive attitude toward everything connected with school. Hence, the specific goals for the children who attend the Montessori School will be:

to know is developed into a habit of being curious--an essential element in creative learning.

5. Developing habits of initiative and persistence. By surrounding children with appealing materials and learning activities geared to their inner needs they become accustomed to engaging in activities of their own. Gradually, this results in a habit of initiative--an essential quality in leadership. "Ground rules" call for completing a task once begun and for replacing materials after the task is accomplished. This "completion expectation" gradually results in a habit of persistence.

6. Fostering inner security and sense of order. Through a well-ordered, enriched but simplified environment, the child's need for order and security is intensely satisfied. This is noticed in the calming effect the environment has on the child. Since every item in the Montessori classroom has a place and the ground rules call for everything being in its place, the child's inner need for order is keenly satisfied. Gradually, the well-ordered environment develops a "sense of order" and that inner security basic to fostering sound emotional growth.

CRMS

PROGRAMMER--SENSITIVE PERIODS

MOVEMENT

1 1/2	Complicated activities (carrying heavy objects, etc.)
	Growth of attention and coordination
2 1/2-4	Perfecting movement
3-4	Managing water

INTELLECT

0-3	Absorbent mind
1 1/2-4	Love of very small objects (sense of wonder)
2-6	Truth and Reality (no fairy tales yet)
2 1/2-6	Refinement of senses
3-4 1/2	Tactile sense

COMMUNICATION

0-3	Language (second language, too) 0-5 1/2-6 full development of language
4 [illegible]	Reading
6-9	Grammatical construction of one's language
1-6	Naming external objects and actions Naming feelings

SOCIAL

3-6	Child is more susceptible to adult influence
2 1/2-6	Learning good manners
4-5	Learning how to be a friend
6-9	Development of a small society with its own laws
6-9	Evolution of life, early human beings, early civilization

PRECISION

2-4	Order in time and space
2-6	Seriation
[illegible]	Numeration with [illegible]
4-6	Four basic arithmetic operations
[illegible]	Memorization of arithmetic facts
[illegible]	Square root
[illegible]	Cube root

FOUR PLANES OF DEVELOPMENT

First Plane

0-3	Unconscious growth and absorption Use of sensitive periods and absorbent mind for creating internal structure for intellectual and emotional development
3-6	Gradual bringing of the unconscious knowledge to a conscious level Material leads child from concrete to abstract By six, the inner formation of discipline and obedience is established. The child has an internal model of reality on which to base creativity.

Second Plane

6-9	Build academic and artistic skills necessary for life in culture
9-12	Open himself to knowledge of the universe itself-similar to absorbent mind, but now conscious

Third Plane

12-18	Explore more concentrated interests in depth

Fourth Plane

18-24	Maturity

MARIA MONTESSORI'S RULES

Listed below are Dr. Montessori's rules for the treatment of the child by the directress in school. You will find them useful in your own relationship with the children.

1. Never touch the child unless invited by him or her (in some form or the other).

2. Never speak ill of him in his presence or in his absence.

3. Concentrate on developing and strengthening what is good in him. Take meticulous and constant care of the environment. Teach proper use of things and show the place where they are kept.

4. The adult is to be active when helping the child to establish relation with his environment and remain outwardly passive but inwardly active when this relation has been established.

5. The adult must respect the child who makes a mistake without correcting it directly. But he/she must stop any misuses of the environment and any action which endangers the child or the other members of the community.

6. The adult must always be ready to answer the call of the child who stands in need of him/her and always listen and respond to the child who appeals to the teacher.

7. The adult must respect the child who takes rest or watches others working and not disturb the child; neither call nor force him/her to other forms of activity.

8. The adult must help those who are in search of activity without finding it.

9. The adult must, therefore, be untiring in repeating presentations to children who have not yet learned, in helping children who need it, to overcome the imperfections in animating the environment, with care, with purposeful silence, with mild words, and with a loving presence. The teacher must make his/her presence felt to the child who searches and hide from the child who has found.

10. The adult must always treat the child with the best of good manners and, in general, offer the child the best the teacher has in him/herself and at his/her disposal.

WAYS ADULTS SHOW LACK OF RESPECT

VOICE
Condescending
Angry
Loud

OVER-DIRECTION
Not allowing children a chance to make their own discoveries. Directing what they say and how they say it.

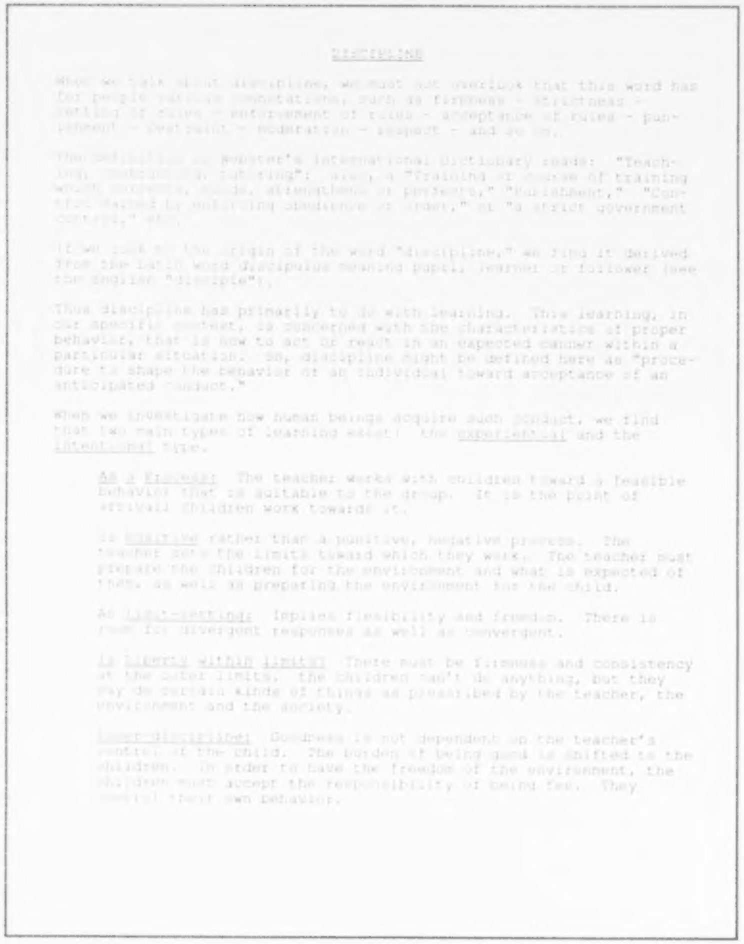
LOOKS
Angry
Disgusted

UNNECESSARY HELP
Staying too long with a child for a lesson
Doing something for a child rather than helping the child learn how
Doing things in the classroom rather than letting the children do them, in order to expedite things

PHYSICAL THINGS
Bodily moving a child
Dragging him or her around, holding on to him or her

CORRECTING ERRORS
Correcting their speech
Changing letters on their papers

FIXING UP WORK
Tidying up work that's laid out
Putting papers in order for them in a book
Throwing away work "not good enough" to take home



DISCIPLINE

When we talk about discipline, we must not overlook that this word has for people various connotations, such as firmness - strictness - setting of rules - enforcement of rules - acceptance of rules - punishment - restraint - moderation - respect - and so on.

The definition in Webster's International Dictionary reads: "Teaching, instruction, tutoring"; also, a "training or course of training which corrects, molds, strengthens or perfects," "Punishment," "Control gained by enforcing obedience or order," or "a strict government control," etc.

If we look at the origin of the word "discipline," we find it derived from the Latin word discipulus meaning pupil, learner or follower (see the English "disciple").

Thus discipline has primarily to do with learning. This learning, in our specific context, is concerned with the characteristics of proper behavior, that is how to act or react in an expected manner within a particular situation. So, discipline might be defined here as "procedure to shape the behavior of an individual toward acceptance of an anticipated conduct."

When we investigate how human beings acquire such conduct, we find that two main types of learning exist: the experiential and the intentional type.

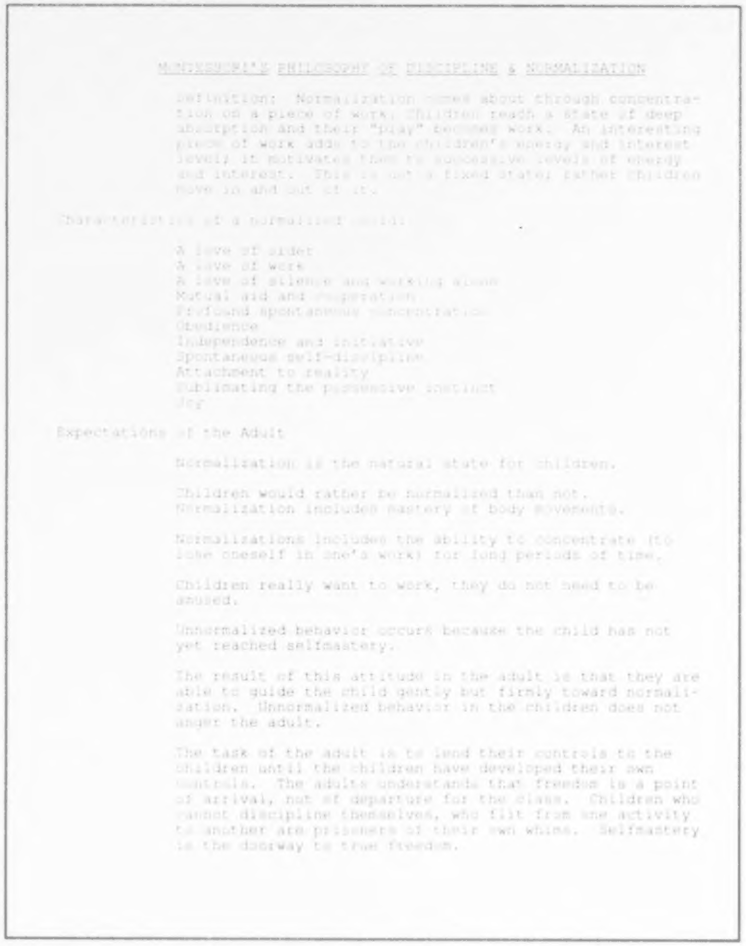
As a Process: The teacher works with children toward a feasible behavior that is suitable to the group. It is the point of arrival; children work towards it.

Is Positive rather than a punitive, negative process. The teacher sets the limits toward which they work. The teacher must prepare the children for the environment and what is expected of them, as well as preparing the environment for the child.

As Limit-setting: Implies flexibility and freedom. There is room for divergent responses as well as convergent.

Is Liberty within limits: There must be firmness and consistency at the outer limits. The children can't do anything, but they may do certain kinds of things as prescribed by the teacher, the environment and the society.

Inner-discipline: Goodness is not dependent on the teacher's control of the child. The burden of being good is shifted to the children. In order to have the freedom of the environment, the children must accept the responsibility of being fee. They control their own behavior.



MONTESSORI'S PHILOSOPHY OF DISCIPLINE & NORMALIZATION

Definition: Normalization comes about through concentration on a piece of work; Children reach a state of deep absorption and their "play" becomes work. An interesting piece of work adds to the children's energy and interest level; it motivates them to successive levels of energy and interest. This is not a fixed state; rather children move in and out of it.

Characteristics of a normalized child:

A love of order
A love of work
A love of silence and working alone
Mutual aid and cooperation
Profound spontaneous concentration
Obedience
Independence and initiative
Spontaneous self-discipline
Attachment to reality
Sublimating the possessive instinct
Joy

Expectations of the Adult

Normalization is the natural state for children.

Children would rather be normalized than not.
Normalization includes mastery of body movements.

Normalizations includes the ability to concentrate (to lose oneself in one's work) for long periods of time.

Children really want to work, they do not need to be amused.

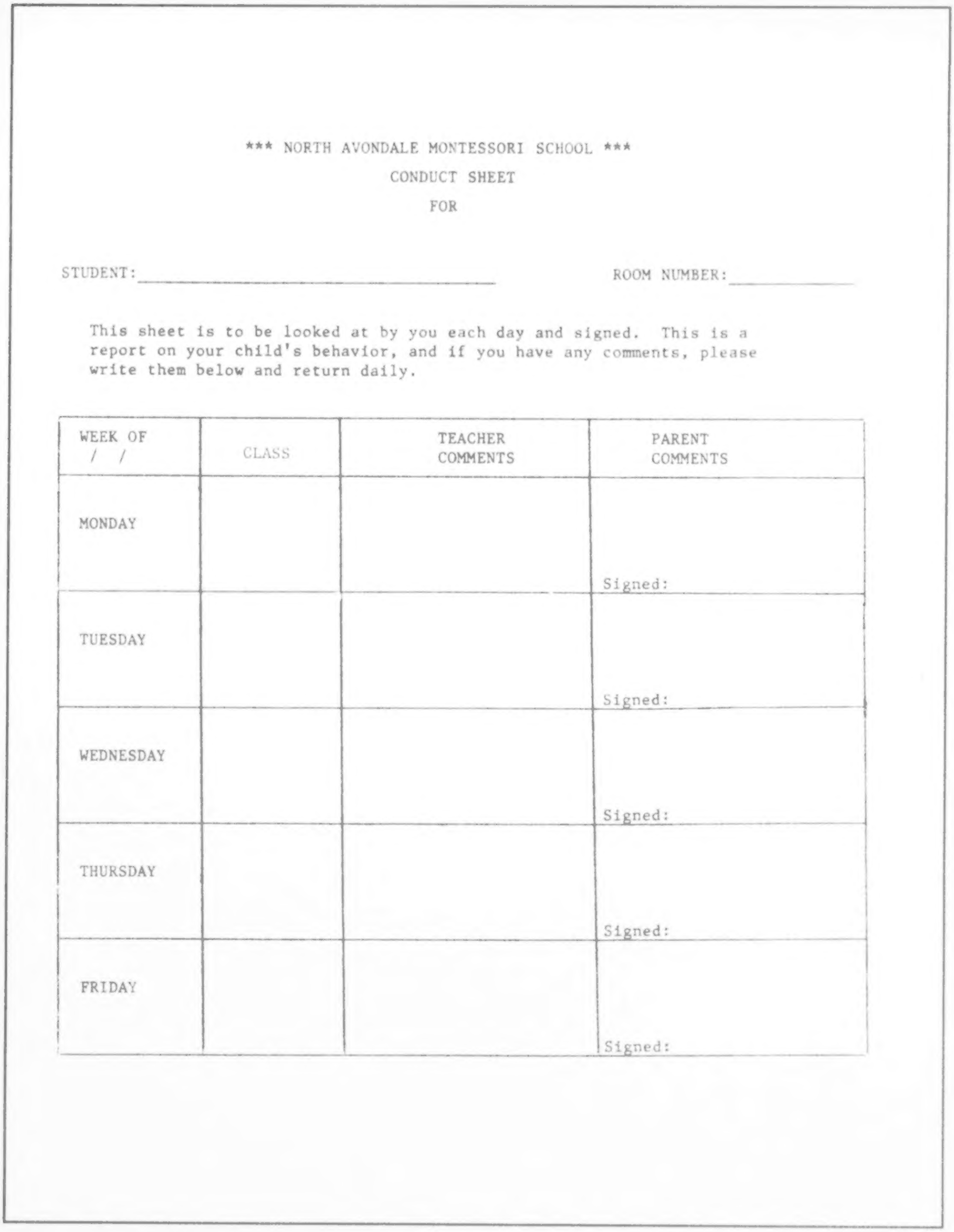
Unnormalized behavior occurs because the child has not yet reached selfmastery.

The result of this attitude in the adult is that they are able to guide the child gently but firmly toward normalization. Unnormalized behavior in the children does not anger the adult.

The task of the adult is to lend their controls to the children until the children have developed their own controls. The adults understands that freedom is a point of arrival, not of departure for the class. Children who cannot discipline themselves, who flit from one activity to another are prisoners of their own whims. Selfmastery is the doorway to true freedom.

Appendix 3: Discipline: Conduct Sheet — North Avondale School, Cincinnati, Ohio

An effective communication device for situations which require positive reinforcement at home.



*** NORTH AVONDALE MONTESSORI SCHOOL ***
CONDUCT SHEET
FOR

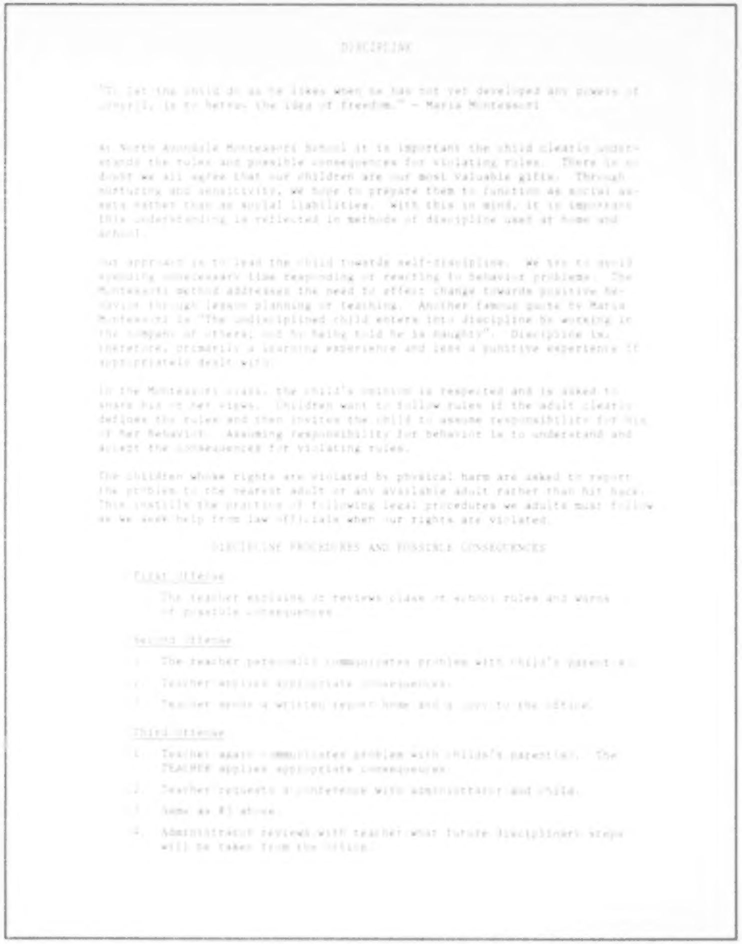
STUDENT:______________________________ ROOM NUMBER:__________

This sheet is to be looked at by you each day and signed. This is a report on your child's behavior, and if you have any comments, please write them below and return daily.

WEEK OF / /	CLASS	TEACHER COMMENTS	PARENT COMMENTS
MONDAY			Signed:
TUESDAY			Signed:
WEDNESDAY			Signed:
THURSDAY			Signed:
FRIDAY			Signed:

Appendix 4: Code of Discipline (1988) — North Avondale Montessori School, Cincinnati, Ohio

A simple contrast of Montessori discipline under normal conditions and extreme misbehavior and its consequences are presented in this memo to the parents.



DISCIPLINE

"To let the child do as he likes when he has not yet developed any powers of control, is to betray the idea of freedom." - Maria Montessori

At North Avondale Montessori School it is important the child clearly understands the rules and possible consequences for violating rules. There is no doubt we all agree that our children are our most valuable gifts. Through nurturing and sensitivity, we hope to prepare them to function as social assets rather than as social liabilities. With this in mind, it is important this understanding is reflected in methods of discipline used at home and school.

Our approach is to lead the child towards self-discipline. We try to avoid spending unnecessary time responding or reacting to behavior problems. The Montessori method addresses the need to effect change towards positive behavior through lesson planning or teaching. Another famous quote by Maria Montessori is "The undisciplined child enters into discipline by working in the company of others; not by being told he is naughty". Discipline is, therefore, primarily a learning experience and less a punitive experience if appropriately dealt with.

In the Montessori class, the child's opinion is respected and is asked to share his or her views. Children want to follow rules if the adult clearly defines the rules and then invites the child to assume responsibility for his or her behavior. Assuming responsibility for behavior is to understand and accept the consequences for violating rules.

The children whose rights are violated by physical harm are asked to report the problem to the nearest adult or any available adult rather than hit back. This instills the practice of following legal procedures we adults must follow as we seek help from law officials when our rights are violated.

DISCIPLINE PROCEDURES AND POSSIBLE CONSEQUENCES

First Offense

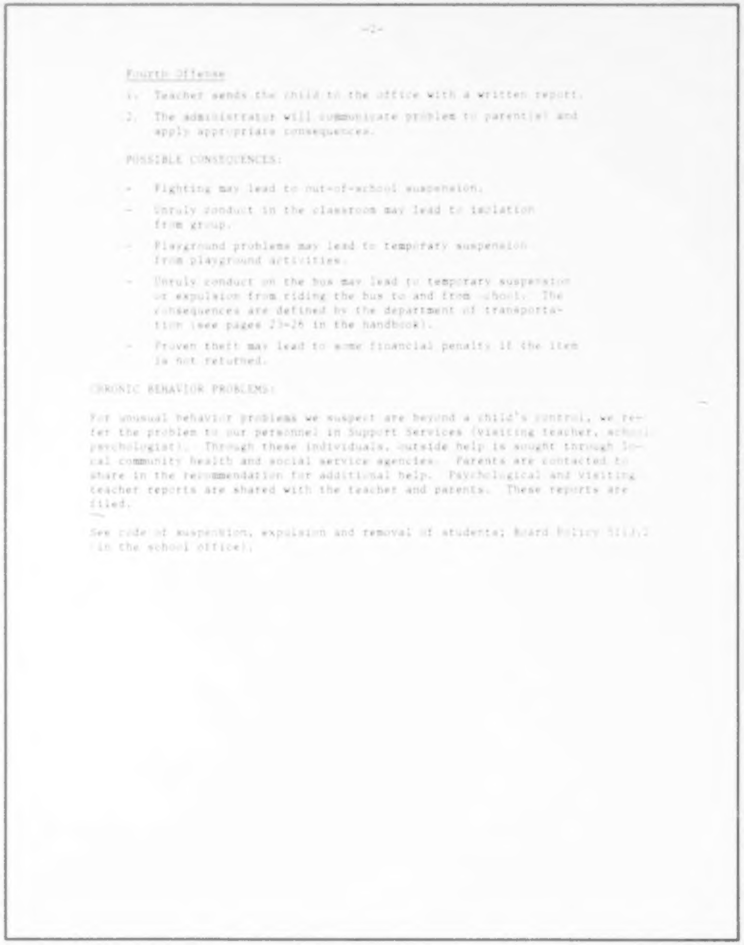
The teacher explains or reviews class or school rules and warns of possible consequences.

Second Offense

1. The teacher personally communicates problem with child's parent(s).
2. Teacher applies appropriate consequences.
3. Teacher sends a written report home and a copy to the office.

Third Offense

1. Teacher again communicates problem with child's parent(s). The TEACHER applies appropriate consequences.
2. Teacher requests a conference with administrator and child.
3. Same as #3 above.
4. Administrator reviews with teacher what future disciplinary steps will be taken from the office.



-2-

Fourth Offense

1. Teacher sends the child to the office with a written report.
2. The administrator will communicate problem to parent(s) and apply appropriate consequences.

POSSIBLE CONSEQUENCES:

- Fighting may lead to out-of-school suspension.
- Unruly conduct in the classroom may lead to isolation from group.
- Playground problems may lead to temporary suspension from playground activities.
- Unruly conduct on the bus may lead to temporary suspension or expulsion from riding the bus to and from school. The consequences are defined by the department of transportation (see pages 23-26 in the handbook).
- Proven theft may lead to some financial penalty if the item is not returned.

CHRONIC BEHAVIOR PROBLEMS:

For unusual behavior problems we suspect are beyond a child's control, we refer the problem to our personnel in Support Services (visiting teacher, school psychologist). Through these individuals, outside help is sought through local community health and social service agencies. Parents are contacted to share in the recommendation for additional help. Psychological and visiting teacher reports are shared with the teacher and parents. These reports are filed.

See code of suspension, expulsion and removal of students; Board Policy 5113.2 (in the school office).

Appendix 5: The Classroom Tour Made Simple, Photographs and Captions — John Burroughs Montessori School, Washington, D.C.

Photos of the children as they work in the classroom are assembled on posterboard to form a pictorial tour for visitors use while observing.

A Primary Montessori class is composed of children between the ages of 2 1/2 and 3 In the midst of all the movement and conversation, each individual is creating the person he is becoming.
Most lessons are given individually. Once a child has received a lesson, he may take it from the shelf and work with it as long as he/she likes. The activity cycle is completed by returning the activity to its special place, ready for the next person.

Entering the class at 2 1/2 or 3, the child is introduced to the lessons of Practical Life.... These activities aid the child in developing muscular coordination, concentration and independence.

Care of the person activities include various dressing frames which isolate one difficulty at a time: snapping, buttoning, tying, and so on.

461

462

Polishing activities are appealing to young children. They enjoy applying polish to an object and uncovering a shiny surface!

The washing activity consists of a lengthy sequence of movements. Intense concentration results as the water and the bubbles absorb the child's attention.

Dirty polishing cloths are scrubbed and hung to dry.

Handwashing is another water activity which is enjoyed by the young child.

The bells train the ear for work with the music scale. With the first exercise, the child pairs identical sounds.

With the touch boards, the child feels rough and smooth surfaces.

Building the broad stair, the child experiences the different dimensions of each prism.

Primary colors are introduced with the first box of color tablets in a simple matching activity. Later, with box 3 of the clour tablets, the child lines the tablets up in gradation.

Preschool children construct the binomial and trinomial cubes as puzzles.

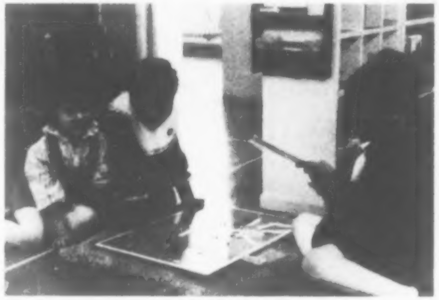
Since the preschool child's approach to life is through his senses, the Montessori Sensorial Material provides experiences which sharpen the child's observation powers.

Tracing the shapes of the geometric cabinet prepares the child's hand for writing while connecting the hand and the mind in muscular memory. The vocabulary prepares the child for the study of geometry.

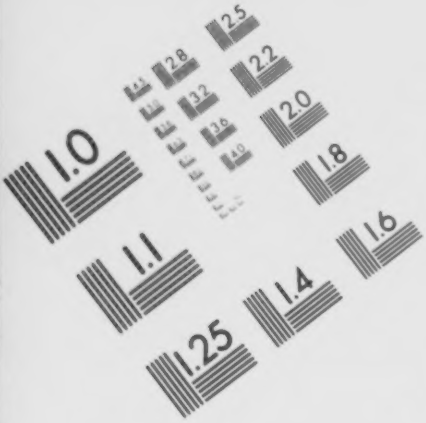
With the geometric solids, the child is given the language for each solid as well as the opportunity to feel each figure.

Cylinder blocks help the child to discriminate size. The control of error is in the material. If a mistake is made, the child will recognize it and correct it himself.

The study of geography opens many new interests for the children. Preschool children are introduced to the names of continents and countries through the puzzle maps. Once the child is able to read, he labels the maps.



Montessori education consists of a triangle; the interaction of the child, the teacher, and the materials. The children create themselves through their environment, coordinate their bodies, stimulate their minds, and develop a life long happy attitude towards the world and the joy of learning.



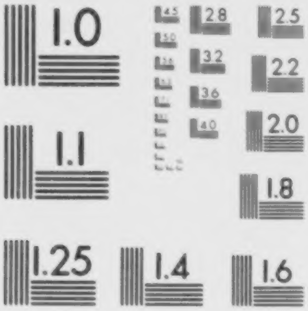
AIIM

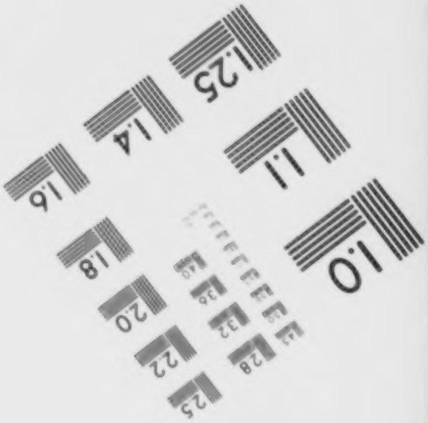
Association for Information and Image Management

1100 Wayne Avenue, Suite 1100
Silver Spring, Maryland 20910

301/587-8202

Centimeter
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 mm
1 2 3 4 5
Inches


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0



MANUFACTURED TO AIIM STANDARDS
BY APPLIED IMAGE, INC.

The sandpaper letters connect the hand with the mind in movement. The tactile sense gives the child experience with the letter and tracing prepares his hand for writing. The phonetic sounds are introduced.

The child analyzes sounds in words with the movable alphabet.

sun
bat
net
dog
hat
pen

Language activities are abundant in the primary class. The children are in a sensitive period for language and absorb vocabulary with ease.

Language in the Montessori classroom includes reading, writing and communication.

An abundance of language materials are provided which enlarge the child's vocabulary and knowledge of the world.

The phonetic object game emphasizes that the written word is a transference of thought.

The metal insets prepare the hand for hand writing and give an opportunity to explore color and geometric shapes.

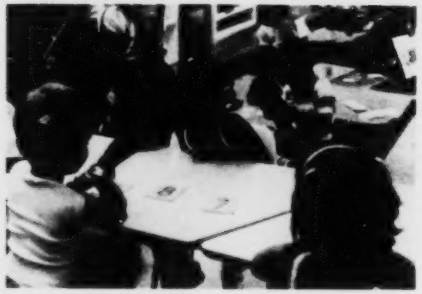
The phonograms; combinations such as sh, ch, and oo are explored with the movable alphabet; isolating the phonogram's sound and helping the child to be aware of the combination.

Puzzle words, words that do not follow any rules, must be memorized. Children make a game out of quizzing each other.

The preschool child is introduced to the function of words activities with the farm. The adjective activity includes, for example, the phrase, "the little pig". Grammar symbols are used to represent various parts of speech.

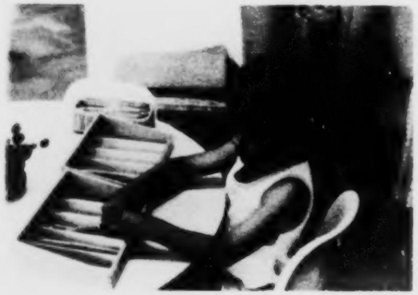
The preschool child's math experience begins with the number rods. As he places his hand on each colored segment, he counts the quantity.

The child learns the number symbols by tracing the sandpaper numerals. The tactile sense connects the hand and the mind and prepares the child for writing.



Next, the child combines the quantity and the symbol.

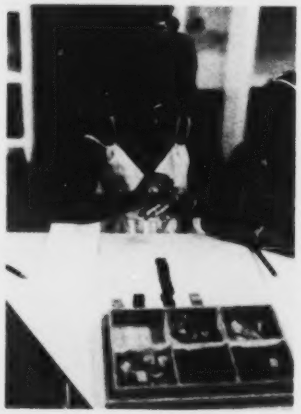
The spindle boxes introduce the concept of zero. The child places the quantity of spindles represented by the symbol in each compartment. The zero compartment is left empty.



With the cards and counters, the child places the symbols in sequence and places the correct number of counters below each numeral.

The golden bead materials introduce the decimal system. The quantity is given first: unit, ten, hundred, thousand. Then the symbol. Then the quantities and symbols together. The material is used to introduce addition, subtraction, multiplication and division.

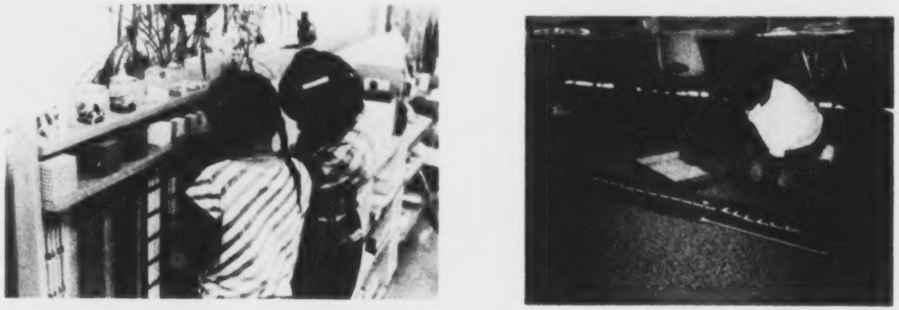
After extensive work with the golden bead material, the child works with the stamp game. The children perform all math operations with this material. It is a little more abstract than the golden bead material; the child must understand the written symbols on the stamps.



The child learns to count linearly with beads. With the tens boards, the child experiences the numbers and quantities of 11-99.

Working with the snake game, the child discovers various combinations which make ten.

One of the uses of the square chains is skip counting. Counting the 5 chain; the child will label every 5th bead.... 5... 10... 15. She sees the numerical pattern.

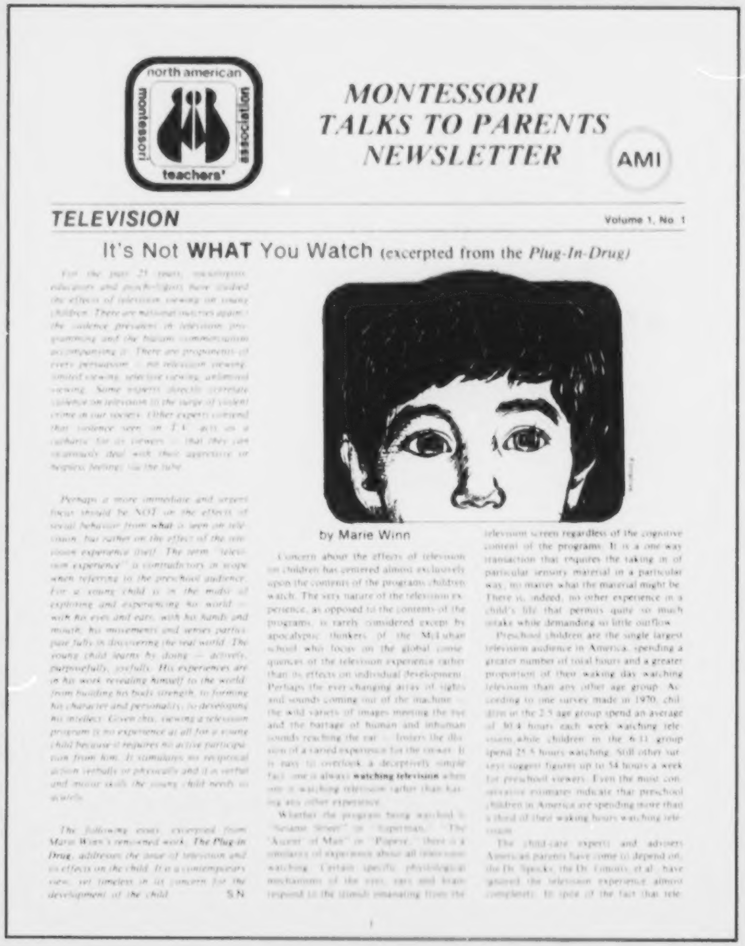


In a multiplication exercise, the child lays out the bead bars of 8 to represent the 8 times table. For example, 8 x 2 is represented with a ten bar and a six bar.

Preschool children keep a simple record of their weather observations.

Appendix 6: "Television: It's Not what you Watch" — *Montessori Talks to Parents* (1982).

Parents need reminders as to just how harmful television is for children. Available for $.75 per copy from NAMTA, 2859 Scarborough Rd., Cleveland Hts., OH 44118.



MONTESSORI
TALKS TO PARENTS
NEWSLETTER

TELEVISION Volume 1, No. 1

It's Not **WHAT** You Watch (excerpted from the *Plug-In Drug*)

For the past 25 years, sociologists, educators and psychologists have studied the effects of television viewing on young children. There are national outcries against the violence prevalent in television programming and the bizarre commercialism accompanying it. There are proponents of every persuasion — no television viewing, limited viewing, selective viewing, unlimited viewing. Some experts directly correlate violence on television to the surge of violent crime in our society. Other experts contend that violence seen on T.V. acts as a catharsis for its viewers — that they can vicariously deal with their aggressive or negative feelings via the tube.

Perhaps a more immediate and urgent focus should be NOT on the effects of social behavior from ***what*** *is seen on television, but rather on the effect of the television experience itself. The term "television experience" is contradictory in scope when referring to the preschool audience. For a young child is in the midst of exploring and experiencing his world — with his eyes and ears, with his hands and mouth, his movements and senses participate fully in discovering the real world. The young child learns by doing — actively, purposefully, joyfully. His experiences are in his work revealing himself to the world: from building his body strength, to forming his character and personality, to developing his intellect. Given this, viewing a television program is no experience at all for a young child because it requires no active participation from him. It stimulates no reciprocal action verbally or physically and it is verbal and motor skills the young child needs to acquire.*

The following essay, excerpted from Marie Winn's renowned work, ***The Plug-in Drug****, addresses the issue of television and its effects on the child. It is a contemporary view, yet timeless in its concern for the development of the child.* S.N.

by Marie Winn

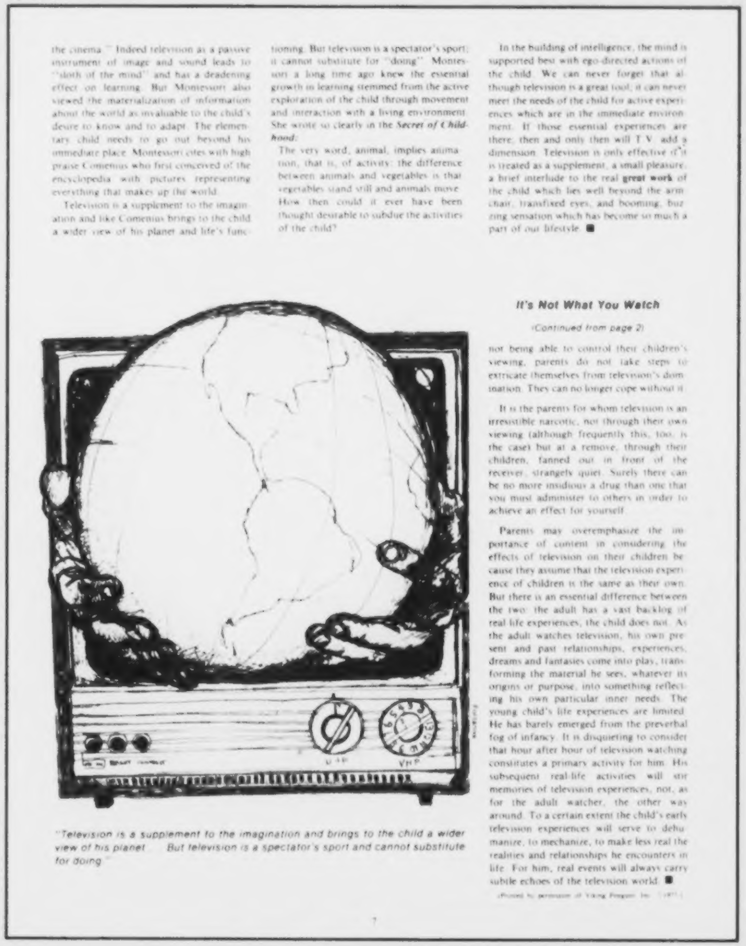
Concern about the effects of television on children has centered almost exclusively upon the contents of the programs children watch. The very nature of the television experience, as opposed to the contents of the programs, is rarely considered except by apocalyptic thinkers of the McLuhan school who focus on the global consequences of the television experience rather than its effects on individual development. Perhaps the ever-changing array of sights and sounds coming out of the machine — the wild variety of images meeting the eye and the barrage of human and inhuman sounds reaching the ear — fosters the illusion of a varied experience for the viewer. It is easy to overlook a deceptively simple fact: one is always **watching television** when one is watching television rather than having any other experience.

Whether the program being watched is "Sesame Street" or "Superman," "The Ascent of Man" or "Popeye," there is a similarity of experience about all television watching. Certain specific physiological mechanisms of the eyes, ears and brain respond to the stimuli emanating from the television screen regardless of the cognitive content of the programs. It is a one-way transaction that requires the taking in of particular sensory material in a particular way, no matter what the material might be. There is, indeed, no other experience in a child's life that permits quite so much intake while demanding so little outflow.

Preschool children are the single largest television audience in America, spending a greater number of total hours and a greater proportion of their waking day watching television than any other age group. According to one survey made in 1970, children in the 2-5 age group spend an average of 30.4 hours each week watching television, while children in the 6-11 group spend 25.5 hours watching. Still other surveys suggest figures up to 54 hours a week for preschool viewers. Even the most conservative estimates indicate that preschool children in America are spending more than a third of their waking hours watching television.

The child-care experts and advisers American parents have come to depend on, the Dr. Spocks, the Dr. Ginotts, et al., have ignored the television experience almost completely. In spite of the fact that tele-

1



the cinema." Indeed television as a passive instrument of image and sound leads to "sloth of the mind" and has a deadening effect on learning. But Montessori also viewed the materialization of information about the world as invaluable to the child's desire to know and to adapt. The elementary child needs to go out beyond his immediate place. Montessori cites with high praise Comenius who first conceived of the encyclopedia with pictures representing everything that makes up the world.

Television is a supplement to the imagination and like Comenius brings to the child a wider view of his planet and life's functioning. But television is a spectator's sport; it cannot substitute for "doing." Montessori a long time ago knew the essential growth in learning stemmed from the active exploration of the child through movement and interaction with a living environment. She wrote so clearly in the ***Secret of Childhood:***

> The very word, animal, implies animation, that is, of activity: the difference between animals and vegetables is that vegetables stand still and animals move. How then could it ever have been thought desirable to subdue the activities of the child?

In the building of intelligence, the mind is supported best with ego-directed actions of the child. We can never forget that although television is a great tool, it can never meet the needs of the child for active experiences which are in the immediate environment. If those essential experiences are there, then and only then will T.V. add a dimension. Television is only effective if it is treated as a supplement, a small pleasure, a brief interlude to the real **great work** of the child which lies well beyond the armchair, transfixed eyes, and booming, buzzing sensation which has become so much a part of our lifestyle. ■

"Television is a supplement to the imagination and brings to the child a wider view of his planet . . . But television is a spectator's sport and cannot substitute for doing."

It's Not What You Watch

(Continued from page 2)

not being able to control their children's viewing, parents do not take steps to extricate themselves from television's domination. They can no longer cope without it.

It is the parents for whom television is an irresistible narcotic, not through their own viewing (although frequently this, too, is the case) but at a remove, through their children, fanned out in front of the receiver, strangely quiet. Surely there can be no more insidious a drug than one that you must administer to others in order to achieve an effect for yourself.

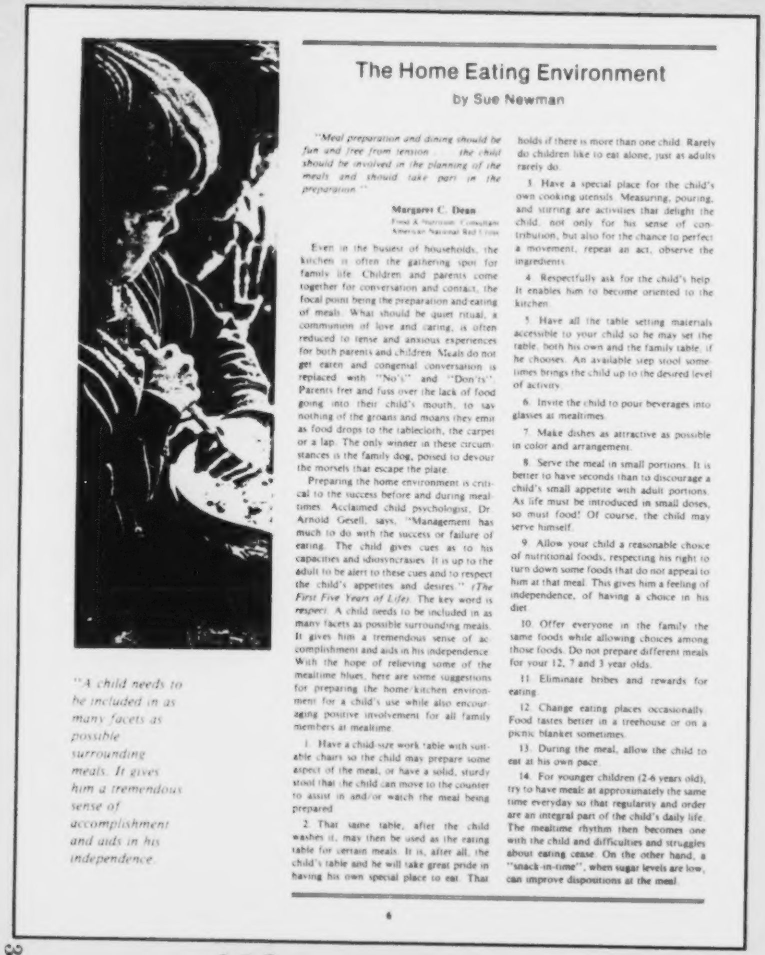
Parents may overemphasize the importance of content in considering the effects of television on their children because they assume that the television experience of children is the same as their own. But there is an essential difference between the two: the adult has a vast backlog of real-life experiences, the child does not. As the adult watches television, his own present and past relationships, experiences, dreams and fantasies come into play, transforming the material he sees, whatever its origins or purpose, into something reflecting his own particular inner needs. The young child's life experiences are limited. He has barely emerged from the preverbal fog of infancy. It is disquieting to consider that hour after hour of television watching constitutes a primary activity for him. His subsequent real-life activities will stir memories of television experiences, not, as for the adult watcher, the other way around. To a certain extent the child's early television experiences will serve to dehumanize, to mechanize, to make less real the realities and relationships he encounters in life. For him, real events will always carry subtle echoes of the television world. ■

(Printed by permission of Viking Penguin Inc. ©1977.)

7

Appendix 7: "Nutrition, The Home Eating Environment," by Sue Newman – *Montessori Talks to Parents (1982).*

A simple handout suggesting ways that will help parents enhance dinner time using Montessori-like activities. Available for $.75 per copy from NAMTA, 2859 Scarborough Rd., Cleveland Hts., OH 44118.



The Home Eating Environment

by Sue Newman

"Meal preparation and dining should be fun and free from tension . . . the child should be involved in the planning of the meals and should take part in the preparation."

Margaret C. Dean
Food & Nutrition Consultant
American National Red Cross

Even in the busiest of households, the kitchen is often the gathering spot for family life. Children and parents come together for conversation and contact, the focal point being the preparation and eating of meals. What should be quiet ritual, a communion of love and caring, is often reduced to tense and anxious experiences for both parents and children. Meals do not get eaten and congenial conversation is replaced with "No's" and "Don'ts". Parents fret and fuss over the lack of food going into their child's mouth, to say nothing of the groans and moans they emit as food drops to the tablecloth, the carpet or a lap. The only winner in these circumstances is the family dog, poised to devour the morsels that escape the plate.

Preparing the home environment is critical to the success before and during mealtimes. Acclaimed child psychologist, Dr. Arnold Gesell, says, "Management has much to do with the success or failure of eating. The child gives cues as to his capacities and idiosyncrasies. It is up to the adult to be alert to these cues and to respect the child's appetites and desires." *(The First Five Years of Life)*. The key word is *respect*. A child needs to be included in as many facets as possible surrounding meals. It gives him a tremendous sense of accomplishment and aids in his independence. With the hope of relieving some of the mealtime blues, here are some suggestions for preparing the home/kitchen environment for a child's use while also encouraging positive involvement for all family members at mealtime.

1. Have a child-size work table with suitable chairs so the child may prepare some aspect of the meal, or have a solid, sturdy stool that the child can move to the counter to assist in and/or watch the meal being prepared.

2. That same table, after the child washes it, may then be used as the eating table for certain meals. It is, after all, the child's table and he will take great pride in having his own special place to eat. That holds if there is more than one child. Rarely do children like to eat alone, just as adults rarely do.

3. Have a special place for the child's own cooking utensils. Measuring, pouring, and stirring are activities that delight the child, not only for his sense of contribution, but also for the chance to perfect a movement, repeat an act, observe the ingredients.

4. Respectfully ask for the child's help. It enables him to become oriented to the kitchen.

5. Have all the table setting materials accessible to your child so he may set the table, both his own and the family table, if he chooses. An available step stool sometimes brings the child up to the desired level of activity.

6. Invite the child to pour beverages into glasses at mealtimes.

7. Make dishes as attractive as possible in color and arrangement.

8. Serve the meal in small portions. It is better to have seconds than to discourage a child's small appetite with adult portions. As life must be introduced in small doses, so must food! Of course, the child may serve himself.

9. Allow your child a reasonable choice of nutritional foods, respecting his right to turn down some foods that do not appeal to him at that meal. This gives him a feeling of independence, of having a choice in his diet.

10. Offer everyone in the family the same foods while allowing choices among those foods. Do not prepare different meals for your 12, 7 and 3 year olds.

11. Eliminate bribes and rewards for eating.

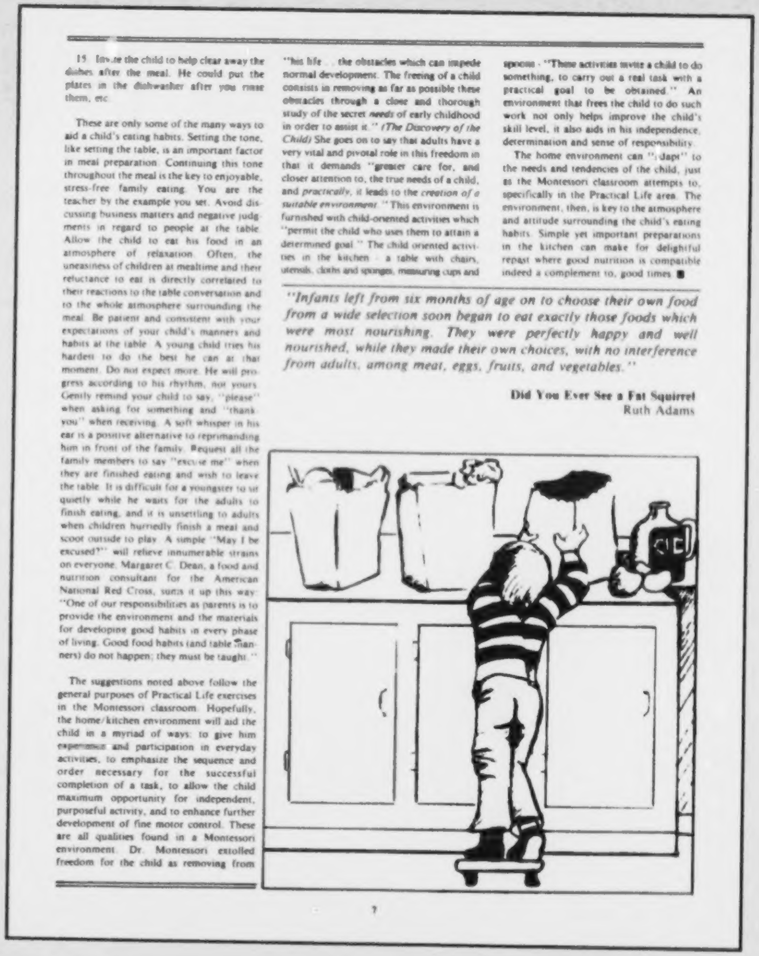
12. Change eating places occasionally. Food tastes better in a treehouse or on a picnic blanket sometimes.

13. During the meal, allow the child to eat at his own pace.

14. For younger children (2-6 years old), try to have meals at approximately the same time everyday so that regularity and order are an integral part of the child's daily life. The mealtime rhythm then becomes one with the child and difficulties and struggles about eating cease. On the other hand, a "snack-in-time", when sugar levels are low, can improve dispositions at the meal.

"A child needs to be included in as many facets as possible surrounding meals. It gives him a tremendous sense of accomplishment and aids in his independence.

6



15. Invite the child to help clear away the dishes after the meal. He could put the plates in the dishwasher after you rinse them, etc.

These are only some of the many ways to aid a child's eating habits. Setting the tone, like setting the table, is an important factor in meal preparation. Continuing this tone throughout the meal is the key to enjoyable, stress-free family eating. You are the teacher by the example you set. Avoid discussing business matters and negative judgments in regard to people at the table. Allow the child to eat his food in an atmosphere of relaxation. Often, the uneasiness of children at mealtime and their reluctance to eat is directly correlated to their reactions to the table conversation and to the whole atmosphere surrounding the meal. Be patient and consistent with your expectations of your child's manners and habits at the table. A young child tries his hardest to do the best he can at that moment. Do not expect more. He will progress according to his rhythm, not yours. Gently remind your child to say, "please" when asking for something and "thank you" when receiving. A soft whisper in his ear is a positive alternative to reprimanding him in front of the family. Request all the family members to say "excuse me" when they are finished eating and wish to leave the table. It is difficult for a youngster to sit quietly while he waits for the adults to finish eating, and it is unsettling to adults when children hurriedly finish a meal and scoot outside to play. A simple "May I be excused?" will relieve innumerable strains on everyone. Margaret C. Dean, a food and nutrition consultant for the American National Red Cross, sums it up this way: "One of our responsibilities as parents is to provide the environment and the materials for developing good habits in every phase of living. Good food habits (and table manners) do not happen; they must be taught."

The suggestions noted above follow the general purposes of Practical Life exercises in the Montessori classroom. Hopefully, the home/kitchen environment will aid the child in a myriad of ways: to give him experience and participation in everyday activities, to emphasize the sequence and order necessary for the successful completion of a task, to allow the child maximum opportunity for independent, purposeful activity, and to enhance further development of fine motor control. These are all qualities found in a Montessori environment. Dr. Montessori extolled freedom for the child as removing from "his life . . . the obstacles which can impede normal development. The freeing of a child consists in removing as far as possible these obstacles through a close and thorough study of the secret *needs* of early childhood in order to assist it." *(The Discovery of the Child)* She goes on to say that adults have a very vital and pivotal role in this freedom in that it demands "greater care for, and closer attention to, the true needs of a child, and *practically*, it leads to the *creation of a suitable environment*." This environment is furnished with child-oriented activities which "permit the child who uses them to attain a determined goal." The child oriented activities in the kitchen - a table with chairs, utensils, cloths and sponges, measuring cups and spoons - "These activities invite a child to do something, to carry out a real task with a practical goal to be obtained." An environment that frees the child to do such work not only helps improve the child's skill level, it also aids in his independence, determination and sense of responsibility.

The home environment can "adapt" to the needs and tendencies of the child, just as the Montessori classroom attempts to, specifically in the Practical Life area. The environment, then, is key to the atmosphere and attitude surrounding the child's eating habits. Simple yet important preparations in the kitchen can make for delightful repast where good nutrition is compatible indeed a complement to, good times. ■

"Infants left from six months of age on to choose their own food from a wide selection soon began to eat exactly those foods which were most nourishing. They were perfectly happy and well nourished, while they made their own choices, with no interference from adults, among meat, eggs, fruits, and vegetables."

Did You Ever See a Fat Squirrel
Ruth Adams

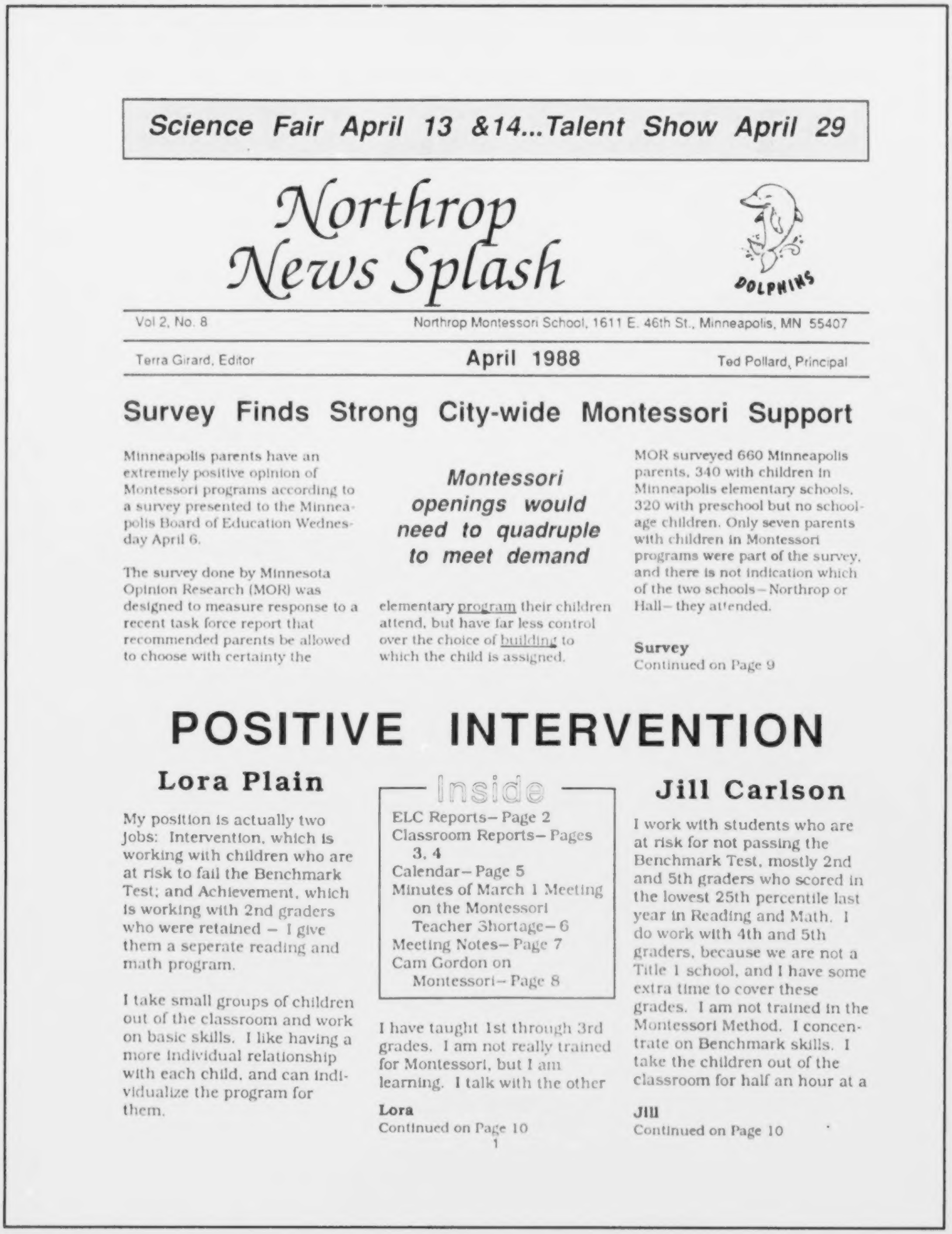
7

493

494

Appendix 8: Northrop News Splash — Northrop Montessori School, Minneapolis, Minnesota

A sample newsletter with good facts, interviews, articles, calendar, and news will build a sense of parent belonging and involvement in the school.



Science Fair April 13 &14...Talent Show April 29

Northrop News Splash

Vol 2, No. 8
Northrop Montessori School, 1611 E. 46th St., Minneapolis, MN 55407
Terra Girard, Editor
April 1988
Ted Pollard, Principal

Survey Finds Strong City-wide Montessori Support

Minneapolis parents have an extremely positive opinion of Montessori programs according to a survey presented to the Minneapolis Board of Education Wednesday April 6.

Montessori openings would need to quadruple to meet demand

The survey done by Minnesota Opinion Research (MOR) was designed to measure response to a recent task force report that recommended parents be allowed to choose with certainty the elementary program their children attend, but have far less control over the choice of building to which the child is assigned.

MOR surveyed 660 Minneapolis parents, 340 with children in Minneapolis elementary schools, 320 with preschool but no school-age children. Only seven parents with children in Montessori programs were part of the survey, and there is not indication which of the two schools—Northrop or Hall—they attended.

Survey
Continued on Page 9

POSITIVE INTERVENTION

Lora Plain

My position is actually two jobs: Intervention, which is working with children who are at risk to fail the Benchmark Test; and Achievement, which is working with 2nd graders who were retained — I give them a seperate reading and math program.

I take small groups of children out of the classroom and work on basic skills. I like having a more individual relationship with each child, and can individualize the program for them.

I have taught 1st through 3rd grades. I am not really trained for Montessori, but I am learning. I talk with the other

Lora
Continued on Page 10

Inside

ELC Reports—Page 2
Classroom Reports—Pages 3, 4
Calendar—Page 5
Minutes of March 1 Meeting on the Montessori Teacher Shortage—6
Meeting Notes—Page 7
Cam Gordon on Montessori—Page 8

Jill Carlson

I work with students who are at risk for not passing the Benchmark Test, mostly 2nd and 5th graders who scored in the lowest 25th percentile last year in Reading and Math. I do work with 4th and 5th graders, because we are not a Title 1 school, and I have some extra time to cover these grades. I am not trained in the Montessori Method. I concentrate on Benchmark skills. I take the children out of the classroom for half an hour at a

Jill
Continued on Page 10

1

BENNET PARK MONTESSORI SCHOOL

PARENT INVOLVEMENT

THE BENNETT PARK MONTESSORI ASSOCIATION: A COLLABORATIVE MODEL OF HOME-SCHOOL PARTNERSHIP

by Rae Rosen

- ***Buffalo's Montessori magnet developed a home-school partnership by including parents in setting objectives, developing priorities, and initiating school activities.***
- ***Parents participate in the Monthly Meeting and formed seven subcommittees to address specific needs.***
- ***Parents maintain a daily presence at the school and volunteer in many capacities such as computer literacy, newsletters, the humanities curriculum, social services, etc.***

INTRODUCTION

The Bennett Park Montessori Association (BPMA) was established in 1977 when Buffalo's magnet school program was first initiated. The school adminstrator suggested the development of a true home-school partnership as an optimal goal for the group. That is, parents were invited to join the staff and the administrator in setting objectives, developing priorities, and initiating activities that would enhance the learning climate and maximize the opportunities for the growth and development of every child. Since parents were now able to choose a particular school program for their child, enthusiasm was high, although, the uniqueness of the Montessori option still raised some issues of concern.

It was decided early in the BPMA's history not to affiliate the group with the PTA because parents wanted everyone to "belong," whether or not they paid the standard dues required for PTA affiliation. Membership became automatic upon enrollment of the child at school. Since both the administrator and the parents visualized "participatory democracy" as an appropriate model for their meetings, a formal organizational structure was vetoed, in favor of a "steering committee" in which everyone was welcome to participate. The steering committee was viewed as the decision-making body with other committees to be formed as needed. The steering committee (currently referred to as "The Monthly Meeting") is managed by a rotating chairperson. A member volunteers to take minutes at the meeting one month and then serves as the chair the following month. The Monthly Meetings are held at the school in the evening. The agenda usually consists of reports by the ongoing committees and a short presentation by a faculty member on some aspect of the curriculum.

Rae Rosen is Principal Emeritus of Bennett Park Montessori Center in Buffalo, New York and is currently a freelance consultant for Montessori public schools.

PARENT INVOLVEMENT

PARENT COMMITTEES

Several committees evolved as needs were identified and discussed. Some have accomplished their goals and disbanded, while others will continue to meet as long as there is still a need for their focused objective. Among these subcommittees are:

Playground Committee

Goal: to establish a play space for primary children. Parents originally tried to design and build the playground themselves. This proved to be an overwhelming task, so assistance was sought from city officials. *Accomplishment:* enough money was raised to pay for the architect's drawings, and the Board of Education and the Common Council provided funding for building the structures. A parent was awarded the contract for construction of the playground.

High School Study Group

Goal: to establish a high school to follow Montessori. Parents from BPMA and three other magnet schools met to pursue the feasibility of an "open" high school, one which would have an innovative philosophy compatible with that of all the schools. *Accomplishment:* a "Humanities" high school (dubbed Leonardo Da Vinci School) was established in 1987, primarily as a result of the Montessori parents' persistence and effort. Its philosophy is congruent with Montessori's, and it offers some opportunities for independent study. Several Montessori graduates have selected it as their high school option, and their parents seem satisfied with the program thus far.

Computer Advisory Group

Goal: to develop computer literacy in each child. Parents interested in this committee convinced the staff that there should be at least one microcomputer in every classroom to teach word processing and logical thinking skills. They encouraged and supported the Chapter 1 Math Resource Teacher in submitting a proposal to the Apple Computer Company. *Accomplishment:* Apple supplied the school with ten microcomputers and the school district purchased the site license for the "Logowriter" software and provided staff development to implement a "Logowriter" project in four classrooms of 9 to 12 year olds. The BPMA allocated funds to purchase three monitors for computers that had been accessed at another school. Chapter 1 funds were used to provide another five computers and these were matched with school district funds to acquire five more computers. These computers were distributed to every age level except the preschool.

Humanities Committee

Goal: to integrate arts-in-education projects for children at every age level. Interested parents wrote grants, lobbied for additional funding from local arts organizations, and convinced district curriculum personnel to find funds for arts activities. They purchased the supplies and got the district's tradesmen to install the artwork. They tapped their own artistic talents to teach each graduating class how to design and silkscreen T-shirts to be reproduced by a parent with a commercial printshop. Presently they are writing a grant which will involve 60 to 70 students in designing and casting a bronze sculpture that may ultimately grace a public space near the school. *Accomplishment:* the arts occupy a central role in the overall development of the students. Many teachers participate in an arts-in-education project which brings teaching and performing artists to the classroom and gives children the opportunity to enjoy new experiences in the community.

Communications Committee

Goal: to improve home-school communication. The parents on this committee revised the school handbook and readied it for publication. One parent, an administrative assistant at a district vocational school, arranged for the printing majors to do the photo-offset. The committee members also publish a monthly newsletter soliciting children's work, classroom news, and school information. The high school students photocopy the newsletter and Montessori students collate and distribute it. A monthly calendar reminds parents of school and community events. *Accomplishment:* parents look forward to the newsletter and say they feel better informed about the school activities.

Family Wellness Project

Goal: to provide support for families in crisis. This group grew out of the administrator's concern for a number of children in the school who had experienced a severe trauma before the age of five and who were now at risk for learning developmentally appropriate tasks. She invited parents who were mental health professionals to brainstorm ways to support parents in gaining access to community services, since options within the school were either too limited or totally non-existent. Support for teachers was also needed because these children experienced many difficulties in the classroom. *Accomplishment:* parents developed strategies for linking parents to appropriate agencies for help. They developed a list of useful resources and contact people and organized workshops for parents and staff members to describe sources for help and how to make use of them.

Montessori Study Group

Goal: to increase understanding of Montessori philosophy and how it is implemented at Bennett Park. The newest committee arose in response to a crisis. Parents recognized the lack of understanding of the school's philosophy when a handful of students and parents tried to change the long-standing prohibition against locks on students' lockers. They successfully fought the attempt, arguing that it violated the school's values of respect and trust. The incident led to the realization that the study group needed to find ways to help parents strengthen their commitment to the school's philosophy. *Accomplishment:* parents who attend the study group seem more secure in their choice of the Montessori option.

These diverse committees offer a variety of involvement possibilities and allow many parents to actively participate in the life of the school. Other types of participation include volunteering in the library and classroom. Parents shelve books, help children do research, read stories to the younger students or do clerical tasks. They also accompany classes on field trips, share their expertise with children in special activities or classroom lessons, create materials, and locate interesting resources. They are encouraged to visit their child's classroom as often as possible to experience the Montessori environment. The unlocked school doors symbolize the openness with which the school welcomes parents as full partners in the educational process. Their involvement is limited only by time and energy.

Despite the increased number of working mothers, single parents, and families in crisis, the presence of parents in school is a daily occurrence. Parents are employed as classroom assistants or tutors, whenever possible. Several parents who began as volunteers have become paid employees. Sometimes this employment enabled them to get off the welfare roll and become more independent, self-actualized adults. Of these, some have gone on to take the Montessori training, to return to college for a teaching credential, and then to become "real" Montessori teachers. About a third of the professional staff at Bennett Park are parents of children in the school. Having a child in the school increases their commitment and involvement and strengthens home-school communication.

About a third of the professional staff at Bennett Park are parents of children in the school. Having a child in the school increases their commitment and involvement and strengthens home-school communication.

Not every parent is actively involved in school activities, but large numbers can always be counted on to support the school in times of crisis. A case in point is the year when budget cuts resulted in the loss of teacher aids, and staff members agonized over the compromises being made. Parents joined together to demand the reinstatement of the aides and pointed out that the presence of an aide in every classroom was required by the district's desegregation order, which could not be ignored. Another crisis occurred when the

PARENT INVOLVEMENT

school was nominally attached to a neighboring school as an administrative device. Parents again successfully coordinated an effort to insure the school's ability to function independently without compromising the Montessori philosophy. Most recently, the "locks issue" united parents in their resolve to preserve the integrity of the school and to resist the pressures of a small group that held values inconsistent with those of the school.

An ongoing problem for the parent association has been the relative lack of participation by minority parents. Only a few minority parents attend the Monthly Meetings. Fewer still are actively involved in a committee. While minority parents do visit school, attend parent conferences, participate in field trips, and come to school-wide celebrations and performances, they seldom choose to be involved in decision-making opportunities. Attempts to hold meetings in homes or during school hours have been only minimally successful. Even when parents personally encourage others to attend a workshop or join a committee, the response is limited. Minority parents express support for the school in many ways, but attending meetings does not seem to interest them. Nonetheless, the association remains committed to seeking new ways to involve minority parents and continually explores avenues of communication.

Equally difficult to resolve has been the lack of active participation of the teachers. The administrator had envisioned a joint partnership between home and school. While teachers do work hard to develop strong networks with the parents of children in their own classroom, they show little enthusiasm for the joint decision-making advocated by the school's administrator. Teachers will choose to work on a particular task alongside parents, such as organizing the school playground or planning for a new high school, but they, like many minority parents, may neither have the time nor the energy to return to school for a meeting.

Parent involvement is alive and well at the Bennett Park Montessori Center, and it is an immensely rewarding and enriching experience for those who exhibit so much devotion to the well-being of the school.

PARENT INVOLVEMENT

ONE SCHOOL'S STORY ABOUT PARENT INVOLVEMENT

by Sandra J. Sommer

- ***Parents are the child's first and most important teachers. They are key to implementation of a Montessori program.***
- ***The Golden Triangle of the child, teacher, and parent working in partnership will help the child to flourish.***
- ***At Sands, school involvement by parents is considered a responsibility. Upon enrollment, membership in the Parent Organization is automatic.***
- ***At Sands, parents volunteer in the classroom, seek funding, set program goals, oversee the budget and transportation system, and attend Board of Education meetings to provide a school-Board liaison.***
- ***Parents are wonderful salespersons with many community and business connections that can help the school develop effective partnerships.***

INTRODUCTION

Sands Montessori is a Cincinnati Public Alternative School Program. The 740 students that attend Sands Montessori range in age from three to twelve. The students come to school each day from all 36 communities of Cincinnati. The school is racially balanced, gender balanced and represents all socio-economic backgrounds. Sands Montessori enjoys Merit School status in high achievement scores, high student and teacher attendance, good discipline, interracial and intercultural understanding, and positive attitudes toward school as evaluated by students, teachers and parents.

WHY PARENT INVOLVEMENT IS KEY TO A MONTESSORI EDUCATION: THE GOLDEN TRIANGLE

Parent involvement is the key to Montessori implementation; it is analagous to Montessori implementation in the classroom. Parents provide the first environment and are collaborators in the process of children "building" or "constructing" themselves. The emotional, social, intellectual, and physical growth of the child is fostered in the home. Parents are an "aid to life" for the child. It is the role of the school to support the higher principles of parenting — the transmission of care, knowledge, love, language, respect for life, democracy, etc., from one generation to the next.

Parents look to Montessori schools as an extension of their child rearing. They show an attraction to the Montessori principles and seek out information about Montessori with every opportunity. They look to the "natural" learning of the school process; they contrast their own traditional education as *not* being natural. They see the difference between memorizing facts, figures, and dates to be recited, with the Montessori approach of *learning how to learn.* They sense the personal interest of the teacher in each individual child. The parent feels a kinship to a school that is personal and natural. The "golden triangle" is formed: the

---

Sandra J. Sommer is the Principal of Sands Montessori School in Cincinnati, Ohio, and a member of the AMS Board of Directors. Sandra Sommer was named outstanding principal by the Cincinnatus Association in 1989.

SANDS MONTESSORI SCHOOL

PARENT INVOLVEMENT

parent, teacher and child are united in a partnership of school and home which lends a fundamental purpose to the operations of the school.

PARENT INVOLVEMENT AT SANDS MONTESSORI

Parents usually help schools in two ways: first, relating directly to the school, and second, assisting at home to aid their children. In the Cincinnati Public Schools we believe that parents are children's first and most important teachers and that the school becomes a partner with the parents in the education of their children.

The Sands Montessori Parent Organization (SMPO)

All parents are members of this umbrella organization. Once a child is enrolled at Sands Montessori, the parents automatically become members. Parents do not pay dues to the organization, rather membership in the organization is a parental responsibility.

It is the role of the school to support the higher principles of parenting — the transmission of care, knowledge, love, language, respect for life, democracy, etc., from one generation to the next.

The SMPO implements three main fundraisers each year: a candy sale, a Walk-A-Thon, and a raffle at the school's annual carnival. The money raised is returned directly to the children's classrooms for materials and equipment.

The SMPO recruits and trains parent volunteers for the following programs that enrich the academic and social program:

a. Great Books
b. Everybody Counts (a program to increase sensitivity toward people with handicaps)
c. Young Authors (children's writings, published twice a year)
d. Picture Person (teaches children about famous art and artists)
e. The Enrichment Program (one-time programs that enrich and enhance the cultural subjects)
f. Extended day activities program
g. Soccer
h. Material-making committee
i. Room parent — organized special events for children
j. Playground and Beautification Committee (B.E.S.T. — Beautiful Environments for Sands Together — plan and implement outside landscaping for the school, a creative play environment, and provide funds for the exterior sign mounted on the building)
k. Building committee (parents make minor repairs and improvements to the physical plant, classrooms, playground, etc.)
l. Sands Montessori Reporter Committee (monthly newsletter)
m. Volunteer in the classroom (tutor, resource provider, cook, teacher of a special talent or interest, or special trip supervisor)

The Sands Montessori Foundation, Inc.

This committee provides funding for long term projects for the school. The foundation has provided encyclopedias for each classroom, computers for the lab, replacement of Montessori materials, and has helped fund a trip for parents and teachers to visit private and public Montessori schools to research seventh and eighth grade Montessori programs. In addition, the foundation provides legal advice to the SMPO, the principal, and the preschool organization. It is the vehicle for most grant proposals for funding from established foundations within the Greater Cincinnati region. Recently, the foundation has provided the seed money and volunteers to start an alumni organization and newsletter.

The Sands Montessori-West End Preschool Foundation, Inc.

Parent involvement unique to the preschool includes: scholarship committee (the committee selects the candidates for scholarships), laundry volunteer, snack and phase-in coordinator, hospitality committee, publicity and recruitment committee, and liaison to the SMPO Sands Foundation.

The preschool parent group has been so successful that at the end of the first two years of implementation the preschool will expand from one classroom (40 children — two half-day sessions) to a second classroom (80 children — four half-day sessions). This expansion includes the building of two new classrooms, bathrooms, indoor play area, and storage area.

The Sands Montessori Governance Board/Local School Advisory Committee (L.S.A.C.)

The L.S.A.C. is a group of five parents, five teachers, five community members and two administrators who give input to the principal on future goals and objectives. It conducts a school/parent/community needs assessment each year, identifies successes and problems, and sets goals for the following school year.

The Local School Budget Committee (L.S.B.C.)

This sub-committee under the Governance Board/L.S.A.C. looks at the school budget and determines how financial resources can best be used.

The Local School Transportation Advisory Committee (L.S.T.A.C.)

Another sub-committee of the Governance Board/L.S.A.C., works with the transportation office to define and refine the transportation needs and concerns of the school. Each parent on the committee is responsible for approximately three bus routes (out of a total of 15). The parent volunteer learns the bus routes, their stops, and which children are involved. In addition, the L.S.T.A.C. conducts a yearly parent meeting, trouble shoots any problems, and keeps parents up-to-date about transportation issues through articles in the "Sands Montessori Reporter."

Parents at Sands Montessori are also involved in the newly formed seventh and eighth grade Montessori committee. This committee, which also involves parents and teachers from all three Montessori schools (Carson Montessori, North Avondale Montessori and Sands Montessori) will help give direction to the Erdkinder project as it develops.

BOARD OF EDUCATION AND COMMUNITY INVOLVEMENT

Other parents like to work for Sands Montessori by involving themselves in the activities of the Cincinnati Board of Education. Several parents attend board meetings and meet with board members when an issue or curriculum item affects the school. These parents are Sands Montessori's liaisons to the members of the Board of Education and the superintendent.

An even larger community group concerned about education in Cincinnati is the **Citizens Active to Support Education (C.A.S.E).** Sands Montessori parents give input and direction to education at large. They actively work to pass school levies and promote citizen involvement for all schools.

The **Partner in Education Program** seeks businesses to become involved with schools and children. The Partners in Education aid children to see that skills they learn in school will be needed in the world of work. Sands Montessori's Partner in Education is Riverfront Coliseum. Show business personalities come to the school and relate how reading, writing and ciphering are necessities of their profession. Children visit the Coliseum to experience first-hand careers in action, from the president of the Coliseum to the marketing director to the engineers to the plant operators. Students can experience all the behind-the-scenes work that must take place before, during, and after an event. At Sands Montessori, our Partner in Education also underwrites the "Sands Reporter" each month and gives us access to their outside light sign to promote our activities and fundraisers.

THE FRIENDS OF SANDS MONTESSORI

Developing community resources, business and corporate funding, and in-kind services is another aspect of home/school/community/parent involvement. This collaboration of business with schools must start from a philosophical point of reference. It is my belief that many aspects of a school must be run like a business. In fact, schools are big business. Cincinnati Public Schools not only purchases services and goods locally and from around the country, it is one of the biggest employers in Cincinnati.

I believe learning is serious business. I believe Sands Montessori must be administered in an efficient yet productive manner just like any other business. You might say that a business sells a service or a product. That is true, but before that service can be rendered, or the product manufactured, there is a process the company goes through to produce their service or product. Schools sell process. In fact a Montessori school, probably more than a traditional school, sells process. If the process is based on sound principles, then the product or service will be of high quality. Sands Montessori, like all Montessori schools private or public, provides a quality process as evidenced by all the indicators of success (test scores, attendance, school climate, etc.). Our "product" is of high quality when it leaves the 9-12 class. It is from this theoretical base that I operate when I ask for help from community resources or businesses. I explain that Sands Montessori is a viable school, just like their business; that Sands Montessori's students come from all over the city, just like their customers; and that our students will someday be the ones implementing their service or manufacturing process.

The principal must set the tone for the whole school and that includes how the school is perceived by the parents and the general public.

Many "Friends of Sands Montessori" are developed from sources that parents can provide. As the principal, I cannot know all the community resources or business connections in the city. Parents can provide the extra help to "spread the word" that Sands Montessori is in need of a particular service or support. Parent networking combined with a good old fashioned "don't be afraid to ask" attitude will often lead successfully to a source. Parents are wonderful salespersons. They know first hand and on a daily basis just how their child is progressing and can communicate that to a "Friend of Sands Montessori." Often sources of help come from unlikely connections and collaborative efforts.

When developing your "Friends" it works best not to ask for money, ask rather for service that the company can provide. For example, if I need new brochures to advertise the school, I go to a printing company. I have found most businesses want to help schools, but expect the principal or representative to guide them in how they can help. When you ask for the same service that they render to their customers on a regular basis, your request becomes one they often can accomodate easily.

One last word about fundraising — my motto is: "Life is one big fundraiser."

SAYING THANK-YOU TO PARENTS

Saying thank-you to parent volunteers and others who help the school is certainly part of a good administrator's job. I try to say thank-you directly with formal letters but in other ways too. Here are some of those ways:

1. I have provided the parents with a room of their own. The Parent Room is a place where the parent organization can keep records and supplies. Parents can meet there, bring their younger children, and not disturb classes. The art prints for the Picture Person Program are stored here and the Great Books program meets here. They can make materials and duplicate letters and flyers to the general parent group. The parent room is used as a parent multi-purpose room.
2. Whenever Sands Montessori parents have helped in any way, they are recognized in the monthly "Sands Reporter" newspaper. When parents or alumni are featured in the news for an honor or their work, they receive recognition from the school. I write numerous thank-you letters and letters of congratulations each month. Articles about parents and alumni are also put in our yearly scrapbook that is displayed in the front hall.
3. Major projects deserve major recognition. Often we will have a plaque made and placed in our front hall. Upon completion of the landscaping project, not only did we dedicate the landscaping project with a plaque honoring all the donors, we also had a sign made that hangs outside thanking all the businesses who donated their service or product to make the project a success.
4. I hold a volunteer tea each year as a formal thank-you. Parents, community volunteers and business persons are invited.
5. I often make calls and send notes, in addition to a formal thank-you letter.
6. The most important way of saying "thank-you" is by taking a personal interest in the parent's child. I am the advocate for every child at Sands Montessori, currently 740 students, preprimary through 9-12.

SUMMARY

The child is paramount. Everything is done for the children presently at school and those who come in the future. Many parts must come together to make a whole. The job of the principal can be compared to that of the leader of the orchestra. It takes various musical selections to form a great musical work and the principal is the conductor.

The principal must set the tone for the whole school and that includes how the school is perceived by the parents and the general public. Parent involvement in a Montessori school is extremely important. It can change a school into a community and ultimately into a family. At a recent Board of Education meeting one parent approached the podium, introduced herself, and began her speech with, "I am part of the Sands Montessori family." It was one of the proudest moments of my life.

MITCHELL MONTESSORI SCHOOL

PARENT INVOLVEMENT

PARENT INVOLVEMENT IN A MONTESSORI PROGRAM: THE DENVER PUBLIC SCHOOL EXPERIENCE

by Ana Maria Villegas and Paula Biwer

- ***Continuity between home and school must be developed and strengthened to improve the quality of education.***
- ***Parents should be involved both at home and at school.***
- ***Various activities include the orientation sessions, parent-student open houses, classroom observations, parent teacher conferences, parent education nights, school information night, etc.***

The school is the institution that provides members of our society with a formal education. Recently, however, we have come to the realization that regardless of how much money is channeled into public education, schools alone cannot ensure that children will reach their greatest potential. For the improvement of education, schools need to develop partnerships with other institutions in society, such as the family (Banks, 1983; Goodlad, 1984).

The role of parents in education is under discussion (Bennett, 1986; Epstein, 1986; Henderson, 1981) as more educators have become convinced that the continuity between home and school must be developed and strengthened in order to improve the quality of education. One way that educators can achieve this continuity is by developing provisions for parent involvement in school programs.

This article deals with the comprehensive effort to involve the parents of children enrolled in the Montessori program in the Denver Public Schools during the 1986-1987 school year. It consists of three sections. First, the literature on parent involvement in the educational process is reviewed. Different types of parent involvement activities are described and their consequences examined. Second, the Denver Montessori program is described, with particular attention given to its parent involvement component. The third section provides a summary and conclusion.

REVIEW OF THE LITERATURE

There are different opinions as to what constitutes parent involvement in education. Gordon, Olmsted, Rubin, and True (1978) proposed a framework to explain various types of activities that are included under the rubric of parent involvement. According to them, there are two broad categories — school-related and home-related activities.

Among the more popular school-related activities for parent involvement are the following: (a)

Dr. Ana Maria Villegas was Assistant Professor at the University of Colorado at Denver, where she taught courses in multicultural education, linguistic and cultural issues in testing, and communicative competence in the classroom. Currently she is a research scientist with Educational Testing Service in Princeton, New Jersey. Paula Biwer is Montessori Program Coordinator for the Denver Public Schools where she helped design and implement the Montessori program at Mitchell School in 1986.

PARENT INVOLVEMENT

participating in governance groups that establish policies for the school or program; (b) attending parent-teacher conferences to gain information about the child's progress; (c) observing the child in the classroom to obtain first-hand knowledge of his or her pattern of participation; (d) volunteering services to the school, such as participating in fundraising efforts or preparing instructional materials; and (e) attending parent education sessions that provide information about the instructional program or ideas for recently received empirical attention because the school can play a major role in their effective implementation (see Comer, 1986; Stevens, 1985).

The second category suggested by Gordon, *et al.* (1978) consists of parents working directly with their children at home. The literature contains numerous examples of parent-child interaction that have been found to contribute to children's learning (see Brown, 1981; Cattermole & Robinson, 1985; Walberg, 1984). In each case, the parent assumes the role of teacher. Interactive situations at home include meal times, getting ready for school, reading and discussing story books, reviewing homework, and planning cultural activities, such as visits to museums.

Research has shown two major benefits are associated with parents' active involvement in the education of their children. First, there is a positive relationship between parent participation in school activities and student achievement (Comer, 1984; Epstein, 1986; Henderson, 1981; Herman & Yen, 1983; Seefeldt, 1985), that is, the greater the extent of parental involvement, the higher the academic gains, although this relationship is at best indirect. More specifically, through participation in school activities, parents gain knowledge and skills that enable them to help their children to learn at home (Bennett, 1986; Epstein, 1986; Howley, Rosenholtz, Goodstein & Masselbring, 1984; Schmitt, 1986).

Second, involvement of parents in school is significantly related to their satisfaction with instructional programs. According to Epstein (1986) and Herman and Yen (1983), participation increases parent knowledge of the educational program and gains support for it. Similarly, Merlaragno (1981) found that parents who participate in school activities become more at ease with the school setting, and better able to communicate with teachers and administrators about instructional issues. Comer (1984) showed that this involvement reduces parents' misunderstanding about and distrust of school programs. He concluded that the presence of parents in the school conveys a message to the children about the importance of formal education.

Parental involvement is a variable that, when used to advantage by school personnel, can make a difference in pupil achievement.

THE DENVER MONTESSORI PROGRAM

Montessori education programs are generally identified with the private sector, however, since the early 1970s, they have been introduced increasingly into the public schools in efforts to promote voluntary desegregation. Williams (1987) estimates that there are approximately fifty such programs in the United States.

During the 1986-1987 school year, the Denver Public School System initiated its own Montessori program. In the first year, 175 three-, four-, and five-year-old children of various ethnic backgrounds were enrolled at the preschool and kindergarten levels in Mitchell Elementary School (see Table 1).

The minority groups were represented in proportion to their total numbers in the district at large: forty-eight percent of the student population was of Anglo background, twenty-seven percent Hispanic, twenty-three percent Black, and two percent Asian. This distribution conforms to the desegregation guidelines used by the district, the goal of which is to have an equal number of majority and minority students in every program.

Plans are to add one grade each successive year until 1992, by which time the entire school will utilize the Montessori system and serve children of ages three through twelve.

PARENT INVOLVEMENT

Table 1

Ethnic Distribution of Students in the Denver Montessori Program (September, 1986)

Ethnic Group	Number	Proportion
Black	41	.23
Hispanic	47	.27
Anglo	84	.48
Asian	3	.02
Total	175	1.00

The goals of the Montessori program are as follows: (1) to have ethnically integrated classrooms; (2) to provide instruction that will develop a strong academic foundation; (3) to foster positive attitudes toward school; and (4) to provide a classroom environment rich in instructional activities that will help children develop the learning-to-learn skills and behaviors associated with school success.

In designing the program, special attention was given to promoting strong parent involvement, including a wide variety of activities.

PARENT INVOLVEMENT COMPONENT

In the Montessori educational programs, parent involvement in the teaching-learning process is considered crucial. According to Maria Montessori, children learn from their environment. Adults promote the learning process by serving as the dynamic link between the environment and the child. That is, learning is not seen as the mere passing of information from the teacher to the student. Rather, it is the process through which the child gains insight about life from daily experiences, whether at school or elsewhere. Thus, teaching is a joint responsibility of the school and the family.

In keeping with the Montessori philosophy, the Denver program strives to maintain continuity between the school and the home. To attain this continuity, a varied series of parent activities was developed and implemented during the 1986-1987 school year. They included an orientation session, a parent-student open house day, classroom observations, parent-teacher conferences, parent education nights, and school information night.

Orientation Session

The initial parent activity was held on the first day of school. A parent, guardian, or relative attended an orientation session as a requirement for placement. Parents brought their children to the assigned classroom and were introduced to the teacher and other students. The children stayed in the classroom for approximately thirty minutes while the adults attended a meeting in which an overview of the Montessori program was given. The purpose of the orientation session was twofold: to begin the exchange of information between the school and home, and to make it clear that parent involvement is critical to the success of the children in the program.

Parent-Student Open House Day

The open house day was designed to promote parent understanding of classroom work. Each student invited his or her family to visit the class. During the visit, the student chose a set of instructional materials to demonstrate, thereby giving parents insight into their child's interest, social relations, and general attitude toward the learning environment.

PARENT INVOLVEMENT

Classroom Observations

Parents were invited to spend an hour observing in their child's classroom during the Fall semester. The observations were scheduled just before the initial parent-teacher conference to provide first-hand knowledge of their child's activities in the classroom and as preparation for a productive exchange with the teachers. A notice stressing the importance of the observation was sent to the parents. To maximize the benefits of the visit, the parents were asked to remain seated and not to interact with their child. They were encouraged to write down questions and discuss them with the Montessori program coordinator after the visit.

Parent-Teacher Conference

Formal parent-teacher conferences were scheduled in the fall and spring, but they also occurred throughout the year at parents' or teachers' request. The conferences provided parents with specific information about their child's academic progress as well as his or her social, emotional, physical, and artistic development. The teacher also explained and demonstrated the materials used in the classroom to further understanding of the Montessori curriculum.

Parent Education Nights

Education nights provided the opportunity to inform parents about the Montessori philosophy, curriculum, teaching and learning modes, learning environment, and the role of the teacher as the link between each student and the learning environment. Through presentations and discussions, parents became actively involved in their child's development. To maximize attendance, childcare was provided.

Three parent education nights were held during the 1986-1987 school year. At the first, basic principles of Montessori education were outlined, and suggestions were given for promoting children's growth at home. The dialogue between parents and teachers that began that night continued throughout the year in both formal and informal meetings. At the second parent education night, key features of Montessori and traditional education were compared and contrasted to help parents develop a deeper understanding of Montessori education. The final session dealt with the issue of discipline in the classroom and home. Parents were urged to contemplate their own disciplinary styles and encouraged to employ the disciplinary strategies used in the Montessori classrooms, thereby ensuring greater continuity between home and school.

School Information Night

This meeting was a review of the accomplishments of the Montessori program during the first year and a planning time for the 1987-1988 school year. The meeting was led by the coordinator of the Montessori program, who encouraged parents to comment on the plans and offer suggestions for revisions as a way for parents to gain ownership of the program.

A variety of attendance strategies were employed: an invitation was extended at least a week in advance stressing its importance. Those parents who did not respond were sent a second notice and/or called by the teachers as a reminder. Childcare was provided during major events. Special arrangements were made for parents who could not attend conferences with teachers or observe their child's class at the regularly scheduled times.

The strategies used to involve parents proved successful (see Table 2). Students in the program were well represented at activities occurring during school hours, with attendance in the range of sixty-two to one hundred percent. More specifically, the high attendance activities were the orientation session (100 percent), classroom observations (83 percent), and parent-teacher conferences (with 82 and 87 percents for the Fall and Spring semesters, respectively). Evening activities were also well attended; however, the attendance pattern for night activities was in the more moderate range of twenty-five to fifty percent, as is evident from the totals for the three parent education nights and the school information night.

Table 2

Relative Frequency Distribution of Students Represented at Parent Activities by Ethnic Group

Activity	Ethnic Group: Black (n = 41)	Hispanic (n = 47)	Anglo (n = 84)	Asian (n = 3)	Total (n = 175)
Orientation session	1.00	1.00	1.00	1.00	1.00
Parent-student open house	.49	.66	.65	.67	.62
Classroom observations	.78	.74	.90	1.00	.83
Parent-teacher conferences Fall	.78	.70	.89	1.00	.82
Spring	.73	.91	.92	.67	.87
Extending Montessori into the home	.34	.45	.62	.33	.50
Montessori and traditional education	.37	.38	.48	—	.42
Discipline	.15	.09	.38	.33	.25
School information night	.15	.11	.48	.33	.30

A detailed examination of the attendance data for each ethnic group reveals differences between majority and minority participation. Proportionately, more Anglo students tended to be represented at parent activities than Blacks and Hispanics. This was particularly noticeable during classroom observations, the parent-teacher conference held during the fall semester, the three parent education nights, and the school information night. Despite these differences, the data shows that Black and Hispanic parents attended the scheduled activities in high numbers. According to the school principal, attendance of minority parents at Montessori program activities was more than double that of the previous year before Montessori was implemented. This is a significant accomplishment. Currently, strategies are being devised to increase participation even more during the 1987-1988 school year.

In light of the research findings, the high level of parent involvement in school activities suggests that the Denver Montessori Program is well on its way to success. Parent satisfaction with the program during the first year is a significant indicator of its popularity. A sample of forty-eight parents was interviewed regarding their perceptions of the program. Forty reported high satisfaction and gave numerous examples

PARENT INVOLVEMENT

of positive changes they had observed in their children since their enrollment in the program. Among the changes mentioned were that the children were: (a) happier; (b) more independent and self-confident; (c) able to concentrate; (d) more accepting of responsibility; and (e) more expressive of their feelings and thoughts.

Across the ethnic groups, the overwhelming majority of the parents was highly satisfied with the Montessori program.

The relatively low attrition rate during the 1986-1987 school year attests to the high level of parent satisfaction and the effectiveness of the parent activities. Table 3 shows that in spite of the usual difficulties encountered when a program is initiated, only twenty-three percent of the total number of original students did not return for the second year. While this figure seems high, the reader is reminded that the program is located in an inner city school which has generally experienced an average of seventy-five percent turnover in the student population from year to year. Thus, the Montessori program has added stability to the school and continuity of instruction for many of its students.

Table 3

Attrition in the Denver Montessori Program during the 1986-1987 School Year by Ethnic Group

Ethnic Group	Number	Proportion
Black	14	.34
Hispanic	10	.21
Anglo	16	.19
Asian	1	.33
Total	41	.23

An examination of the reasons that parents removed their children from the Montessori program provides additional insight into the dynamics of the school. Table 4 shows that the most frequent reason for discontinuing the program was relocation beyond the district boundaries, whether outside the city, state, or country. Moving accounted for fifty-six percent of the total attrition of forty-one percent. Interestingly, this factor accounted for ninety percent of the loss among Hispanics, for whom the mobility rate is highly affected by their immigration status. Thus, over half of the attrition rate was beyond the control of the school. Among the other reasons that parents withdrew their children from the program were: disagreement with the Montessori philosophy, desire to keep siblings together in the same school, commitment to the neighborhood school concept (opposition to busing), and transportation problems. The last three concerns accounted for most of the attrition among Anglo students.

MITCHELL MONTESSORI SCHOOL

PARENT INVOLVEMENT

Table 4

Reasons for Leaving the Montessori Program
by Ethnic Group

Reason	Ethnic Group				Total (n = 41)
	Black (n = 14)	Hispanic (n = 10)	Anglo (n = 16)	Asian (n = 1)	
Moving	.50	.90	.43	—	.56
Disagreement with program philosophy	.29	.10	.06	1.00	.17
Transportation difficulties	—	—	.25	—	.10
Keeping siblings together	.14	—	.13	—	.10
Appeal of neighborhood school concept	.07	—	.13	—	.07
Total	(1.00)	(1.00)	(1.00)	(1.00)	(1.00)

SUMMARY AND CONCLUSION

During its first year of implementation, the Montessori program in the Denver Public Schools made great strides toward increasing the educational opportunities for students in the district. A significant aspect of the program was the potential for parent involvement through a variety of activities. The program staff employed different strategies to ensure high attendance at those activities, including advance notice of the events, systematic follow-up for parents who did not respond to the initial invitation, special arrangements to accommodate parents' schedules, and childcare for selected activities.

The data show that every activity was well attended, but more parents attended those held during school hours than the ones in the evenings. More Anglo students were represented at the activities; however, Black and Hispanic students were relatively well represented. In comparison to previous years, before Montessori, the attendance of Black and Hispanic parents at school activities was improved significantly.

Across the ethnic groups, the overwhelming majority of the parents was highly satisfied with the Montessori program. In their view, the children were learning and program personnel were responsive to their needs. They considered the parent activities interesting and instructive. While some parents acknowledged that problems existed (e.g., delays in transportation, not having all siblings accepted into the program), they generally felt that the benefits of the program outweighed its drawbacks.

The history of the Denver Montessori program is brief. Based on the data collected during its initial year, it is clear that much has been accomplished, particularly with regard to involving parents in the education process. Additional time, however, is needed before the impact of the Montessori program can be determined, but it is evident that a strong partnership between school personnel and parents is being formed.

PARENT INVOLVEMENT

REFERENCES

Banks, J. A. Multiethnic Education and the Quest for Equality. *Phi Delta Kappan*, 63, 1983. pp. 582-85.

Bennet, W. J. *First Lessons: A Report on Elementary Education in America.* U.S. Department of Education. 1986. Washington, D.C.

Brown, F. Model of Education for the 1980s: Union of School, Community, and Family. *Urban Education*, 16 (3) 1987. pp. 361-75.

Cattermole, J., & Robinson, N. Effective Home School Communication from the Parents' Perspective. *Phi Delta Kappan*, 67 1985. pp. 48-50.

Comer, J. Parent Participation in the Schools. *Phi Delta Kappan*, 67, 1986. pp. 442-46.

Comer, J. Home-School Relationships as They Affect the Academic Success of Children. *Education and Urban Society*, 16, 1984, pp. 323-37.

Epstein, J. Parents' Reactions to Teacher Practice of Parent Involvement. *The Elementary School Journal*, 86, 1986. pp. 277-94.

Goodlad, J. I. *A Place Called School.* NY: McGraw-Hill, 1984.

Gordon, I., Olmstead, P., Rubin, R., & True, J. *Continuity Between Home and School: Aspects of Parent Involvement in Follow Through.* ERIC Document Reproduction Service No. ED 154 1978 913.

Henderson, A. (Ed.) *Parent Participation and Student Achievement: The Evidence Grows.* ERIC Document Reproduction Service No. ED 209 1981 754.

Herman, J., & Yen, J. Some Effects of Parent Involvement in Schools. *Urban Review*, 15 (1) 1983 pp. 11-17.

Howley, W., Rosenholtz, S., Goodstein, H., Masselbring, T. Good Schools: What Research Says About Improving Student Achievement. *Peabody Journal of Education*, 61 (4) 1984. pp. 117-24.

Merlaragno, R. J. *Parents and Federal Education Programs: The Nature, Causes, and Consequences of Parental Involvement.* CA: System Development Corp, 1981.

Schmitt, D. Parents and Schools as Partners in Preschool Education. *Educational Leadership*, 44, 1986. pp. 40-41.

Seefeldt, C. Parent Involvement: Support or Stress? *Childhood Education*, 62, 1985. pp. 98-102.

Stevens, B. (Ed.) *Schools Effectiveness; Eight Variables That Make A Difference.* Michigan: Michigan Board of Education, 1985.

Walberg, H. Families as Partners in Educational Productivity. *Phi Delta Kappan, 65*, 1984 pp. 397-400.

Williams, P. J. Cincinnati: Developing the Montessori Magnet School. *North American Montessori Teachers' Association Journal, 12* (2) 1987. pp. 37-42.

PARENT INVOLVEMENT

MONTESSORI IN THE CITY: WORKING WITH AT-RISK FAMILIES

Alicillia Clifford, a prominent black educator, has over sixteen years' experience working as a teacher and school administrator in the inner city of Cleveland, Ohio. She has worked with economically disadvantaged families from a number of different cultural groups and has found that certain characteristics of life style tend to transcend ethnic and cultural groups. While it can be unfair and inaccurate to generalize about all urban families, Mrs. Clifford believes that in order to best serve families of any population, it is important to be actively aware of lifestyle differences as well as similarities.

Kahn: The first thing I'd like to talk about is the development of teachers in the urban environment. What are their skills when they come from their training and what is the sequence for bringing them to a performance level that is satisfactory to your operations?

Clifford: When teachers come in from training, they have a bachelor's degree, at least, and an AMI Diploma. With those credentials they usually can understand the basics of early childhood education and child development. What they lack is specific training in dealing with the special problems they will encounter in the urban setting. Here at Marotta we give them what they need to know in a series of in-service meetings. We talk about the different strategies that can be used in the urban classroom. For example, we look at the home environment to try to come up with clues for teachers on how to speak to the child in a clear manner so the child understands and doesn't misinterpret what the teacher is saying, especially in the area of discipline.

Kahn: Give me an example.

Clifford: Sometimes in the urban environment you find that it is loud and noisy in the homes. Instructions are commonly given four, five, even six times before the child thinks about moving. When this happens in the classroom, the teacher needs to go over to the child and, at the child's eye level, repeat the instruction. In this way, the child learns that it is expected that instructions are to be followed immediately.

Kahn: So eye contact will take care of it?

Clifford: Eye contact is a start, it brings your voice to their attention and they learn to separate it from other noise in the classroom.

Kahn: What do you tell your new teachers who have no experience working in the inner city about discipline in the classroom?

Clifford: The most important thing to know about discipline is that the child is acting as he normally acts at home. If they understand this, that he is not acting out, then they can explain the rules of the classroom. The children need to know that there are different rules in the school environment than there are at home. But teachers should not expect these children to change their home rules right away because these are survival rules, and first and foremost we must all survive.

Sometimes the children curse. This might catch the teacher off guard because the child might not even be able to pronounce his name well. It is important when this happens not to look surprised. This is what they want. They don't really know it's wrong to curse but they do know they get a reaction when they do it. The best thing to do is to correct the pronunciation, ask if they know the meaning of the word, how to spell it, the same things that would normally be done with any other word. Then explain very clearly that it is inappropriate to use this word in school.

Kahn: What about other areas of discipline?

Clifford: We can always expect to encounter episodes of hitting, punching, biting and so on. First the teacher has to let the child know that we use words to convey our feelings, not violence. Oftentimes the children don't have enough vocabulary to express themselves appropriately. They have to be taught to say, "Would you stop that because I really don't like it," "Would you leave my work alone," or "I don't want to work with you because you have me upset." You must help them build their vocabulary. If you think about it, suburban children have the same problems, they just use words.

Kahn: That really relates to Montessori grace and courtesy lessons. How would your training be different in this area?

Clifford: Grace and courtesy is actually emphasized in the urban classroom. Whenever the child does the slightest thing for you, bring it to the attention of the entire class. Say, "thank you." When there is a birthday party and you are serving the children, make it a group lesson using the proper words. Say, "excuse me." You can't be subtle. Their words for kindness might be, "Get out of the way, stupid."

The most important thing to know about discipline is that the child is acting as he normally acts at home.

Grace and courtesy is handled as a group lesson at the end of the morning, although at the beginning of the year it is done first thing in the morning to set the stage for working together. We also use role playing and modeling to teach grace and courtesy in parent meetings.

Kahn: How do you convey "grace and courtesy" to parents?

Clifford: We do it primarily by modeling at the parent meetings, again over-emphasizing politeness and the use of appropriate words. "Hello, good evening, would you like to come and work here?"

Kahn: I see. You present the classroom materials to the parents when they come to parent meetings.

Clifford: That's right. You put them in the role of the child.

Kahn: So in the presentation style you convey these principles of politeness and grace and courtesy. How about another aspect of discipline?

Clifford: One that worries most of the teachers is the way the children act out when their family splits up. When this happens, the best thing is to try to gather as much information as possible from the parent. So call home immediately. If the dad and mom say they were in jail over the weekend and the child is acting out because of this, then take the child aside into a private conference area and talk about it.

Kahn: So you always assume there is an underlying cause and you seek out the family for that information and then talk to the child to make sure he can communicate it properly. That makes a lot of sense. What about the child who comes from a terrible situation and there just doesn't seem to be any support at all?

Clifford: When the child comes from this situation you go to the parents. The parents may be nineteen or twenty and may not have any conception about what you're talking about, or about anything except their personal needs. What you do is give them a prescription, as a doctor would, that this is what the parent should do for the day. Then you give them a phase-in program.

Kahn: Who generates this prescription?

Clifford: That's between the teacher, the principal and the parent. Usually the young parent doesn't know what's going on and is rather lost and will agree with you that the problem happens at home, too, and that they don't know what to do about it either. So the three of you come up with a suggestion which might be, "Let's start getting the child to bed on time. This week bed time will be at 8:30 every night. The child should start getting ready at 7:30."

Kahn: I assume that you send a reminder note or checklist home every day which the parent signs, e.g. John went to bed on time, to maintain a visible communication.

Clifford: That's right. That's with the parent. Now with the child in the classroom, you put a checklist on the wall. On the checklist are five chances. Each day the child doesn't comply he or she uses up one chance. When the fifth chance is used the child is out of the school. The consequence has to be harsh, and the child has to know this.

Kahn: The child is sent home for the day?

Clifford: That's right. Then you decrease the number of chances the child gets over the next four weeks until the behavior becomes appropriate.

Kahn: So you give checks for misbehavior rather than positive reinforcement for good behavior. Have you ever suspended a child?

Clifford: Yes, we have. And when we do, it is done immediately and abruptly. If you can't get the parents then you get the grandparents and you emphasize the importance of their actions. If they want the child to come back to school at all they have to drop everything, look at the child's needs, and get him or her right then. This way there is no misunderstanding on anyone's part. The child's actions will not be tolerated.

Kahn: Why is it a five week program? Why doesn't it just diminish as the child diminishes the activity?

Clifford: Because both the parent and the child need to see some positive response, to see that they can do it. So for the first five weeks we work on maybe two major things. One is to get the child to bed on time instead of at twelve or one o'clock because that child is tired in the morning. The child might be working on trying to choose work.

Kahn: So in a way the sheet shows a positive action. In terms of the limitation of time, is this so things don't just go on forever?

Clifford: You can only keep the parents interested for five weeks. You can't keep them interested for longer than that; we've tried.

Kahn: What happens if results don't come through?

Clifford: Then we're back to the conference again. One way or the other, at the end of five weeks we have another conference. If we're lucky we can talk about how well things went. If not, we're back to, "Well, you know it didn't work. Why do you think it didn't work?" Maybe they'll say, "Well, you know my grandmother's the boss. She tells me what to do and my child what to do and I'm not happy." So the child is like the mother, rebelling against someone else. So we go to a deeper stage of the problem. Usually if there isn't a positive change within the five weeks there is something else going on.

The first stage is **survival.** ***This is the stage when they might be shocked by the way the parents look, what they say, when parents might hurt their feelings even though they won't mean to.***

Kahn: So it's a way of dealing with pathology or serious family problems.

Clifford: And you know, it may come to a time when we can't fix the problem. That's when we call on our social service resources. But we do always try to handle the problem first ourselves.

Kahn: The next step is referral for teacher support and the last step is referral for family support. Doesn't that encourage the teacher to get in too deep?

Clifford: This is true. But if you're in the city, in the urban area, you're already in deep. You're in deep from the time you arrive at school to find a syringe or bullets on the playground. You're in there so you might as well go for the long run.

Kahn: So, if I can summarize, you're saying that as opposed to the suburban situation where the problems are referred out when the teachers feel they can't handle them, here you have to encourage the teachers to go as far as they can without relying on social services.

Clifford: Yes, because social services are looked on as a threat by most families. These families are on welfare; their health care is such that they have been passed from person to person and they feel that nobody cares. Their self-esteem is really low. Montessori works because the same person has three whole years to work with this family and this child. They eventually come to trust us.

Kahn: In terms of stages of development, how do the teachers finally come about in their formation?

Clifford: There are four stages that teachers go through in their development. The first stage is *survival*. This is the stage when they might be shocked by the way the parents look, what they say, when parents might hurt their feelings even though they won't mean to. The teachers worry about how they are going to make it through the year. At this stage they need a lot of on-site support.

Once they get through the survival mode they are on to *consolidation*. They have withstood the initial pains and have learned to listen a little better. They have learned how to obtain and use colleague support and how to use outside resources.

The third stage is the *renewal* stage, which takes about four or five years in the urban area. Suddenly the teacher realizes that the first three-year class has gone all the way through the program, the classroom has settled down, and the children can really work. Now only a third of the parents are new to the school and to the teacher, and it's not so bad anymore. There are only seven new parents and maybe only one or two of them are difficult. So the teacher feels renewed. It's during this time that it's important to get to professional meetings like the ones NAMTA gives. They need to go to Montessori workshops to increase their Montessori skills, and they need to join professional groups so that they have colleague support. If there is an urban public school movement they need to get involved with that, to hear other people talk, to read magazines, and to start finding out about research.

The last stage is *maturity*. I'd say it takes ten to twelve years to reach the maturity level. At last you are comfortable with what you say when you talk to a parent, and you're comfortable when you see a child who has a problem. You just know what to do. If the teacher hasn't increased his or her degrees by this time, this is the time to do so, to increase the level of base knowledge and not become stale. They need to avoid the bulletin board syndrome, to come out with new and fresh ideas for the children.

Kahn: So here you are dealing mostly with teachers at the survival and consolidation stages. What if a teacher develops a kind of paralysis? What sort of intervention techniques do you use with teachers who seem to be in the middle of combat and freeze up?

Clifford: You have to make yourself available for that person, not just across the desk during school hours; you have to be a person they can call in the middle of the night. It's difficult for the administrator, but if they seek your help and advice they are trying. Some might just quit. If your car has been stolen, money is missing from your purse, you've been cursed out by a parent, and you have a child that can't stop kicking and biting and hitting all the time, you can't compound that with an administrator who won't listen. The other thing the administrator can do is to go into that teacher's classroom and work with him or her as an assistant all day, maybe for a week. After that you continue to drop in to give them support.

If the teacher is doing something inappropriate you talk to him or her about it, give a warning for the second time, and if the behavior continues despite your intervention, the teacher is released.

Kahn: What techniques do you use when the parent acts out?

PARENT INVOLVEMENT

Clifford: Dr. Montessori talked about this. When a parent puts a child in the program he or she must respect the director and directresses, the environment, and must respect the rules and regulations of the school. Then she gave a list of rules and regulations for the children's house.

If a parent comes into the building and threatens a teacher, uses swear words, etc., we let them have their say and then tell them to leave the environment. To confront the person then is a mistake. The next day the office prepares a letter that is given to the parent when he or she drops off the child and a conference is held with the parent at that time.

The entire staff has to be put on notice that a parent has acted out and that that parent must be taken to the office because the parent will try to avoid you. All classrooms have a phone for security purposes, so if the parent refuses to go to the office, the teacher or assistant calls the office right then. I make it my business to go and confront that parent. If the parent is still acting out and disturbing the classroom, I stand close to the parent to help diffuse the anger and I tell the person in a very low voice that I want them out of the building now. Usually they take their instruction and go. I walk them towards the door and invite them to talk to me in my office. I alert my secretary to call the first line of security, our custodians, and, if the person is intoxicated, smells of drugs, is overly aggressive, inform the secretary to call the police. There should be a mini-precinct nearby with which the school has an ongoing relationship and from which you can expect a quick response.

Parent acting-out can also happen in the form of lies. A parent will talk to different teachers about one particular teacher that they don't like, or want to get rid of, or that they feel is prejudiced, or other unfounded things that they might have going on in their head. When this happens the entire staff is instructed not to hold conversations with parents who are not from their classrooms. They can say hello and should be polite, but if anything is said about a child or anyone else, they are instructed to direct that person to the office immediately. This stops the person from gossiping.

Sometimes the parent acts out toward the other parents. You have to be careful of this because it spreads like a cancer. If a parent accuses another parent of child abuse, you call the PTA president and report the matter. You then call the parent and tell him or her that you don't want to hear this from anyone else because you will know that they are spreading rumors, that it's sabotaging the school, and it's grounds for dismissal.

This is a good time to reiterate the rules about threatening a teacher and using swear words. They get only one notice for this because you have to protect the teachers. You don't want to lose a teacher because a parent is having home problems. Encourage the parent to talk to you about the problems. Sometimes the husband has beaten up the wife and she comes to the school to beat up on me. It is the principal's place to help the parent solve the problem. You really have to get into it.

Kahn: What do you mean by that?

Clifford: Meaning you can't say you want to hear their problems and then not be there to hear them.

Kahn: In other words you have to take the time to really listen... .

Clifford: ...and show that you really care. When they see that you do care, their attitude begins to change.

Kahn: What's the warning notice that you give the parents? Do you have a written notice that you give them?

Clifford: We have a written notice where we quote Dr. Montessori regarding behavior. We put it with a dismissal notice that says if the behavior continues they will be put out of the school.

Kahn: Compared with other schools, how do you structure parent conferences? How would you characterize the different relationship between your parents and the school?

Clifford: Here we try to become confidants to the parents, friends they can talk to about a divorce, family problems, anything going on in the household, and not feel ashamed. Because this is our goal, we intensify the family part of the program. We meet with the families about three times a month. We have regular educational workshop meetings that are held Saturday or Sunday evenings when most parents can come. We talk about areas of parenting skills using Montessori in the home such as orderliness, lining up shoes, that sort of thing. We give examples of how to utilize a small space because most of these homes are small with a lot of people in them. We emphasize the child's need for his or her own space. We show them how to use crates and cartons, shoeboxes and objects they have at home for storage of the child's belongings or to reach the counters so they don't have to spend money. This is really just sequencing, order and organization.

We give them tips on how to talk in a positive way with their children and how to reinforce good behavior. We talk about how the words we use may hurt the child's feelings and lower his self-esteem. The way you do this is to make the parents feel so comfortable in the group that they start coming out with these words during the meetings. The children use them at school and you know they are coming from the home. So we ask the parents how they feel when someone says, "Girl, get your ass across the room." That's a whole different thing than just saying, "Come here." The way to make them comfortable is to sit next to them, or on the floor, and share problems with them at their level, not in an authoritative way, but just as another human being. In this way we get them thinking about their children.

Another aspect of the parent groups is that we try to get the parents to take responsibility in the school, to make decisions and to run things themselves. I might say, "I notice that the classrooms need more books"; or "I see the coat racks are down. How about if we build them up?" You want them to start becoming a part of the school. In most schools parents come to help out in the environment at the stage when they read the notes sent home. Our parents read nothing but two-liners. When they first come in, they don't notice things. They have to be called about every field trip because they don't read the notes sent home. When you do write a note it must be short and to the point — preferably only a sentence or two.

The next step is to have the parents come into the classroom after an open house for cookies and punch. They get a chance to go through the environment and we give them a group session on what the children are doing in the classroom. They go around and handle the materials and finally sign up for individual conferences with the teacher. At their conferences, the teacher goes over the academic areas and then carefully gets into whether there are any problems going on in the home, especially if a change has been noted in a particular child's behavior.

Kahn: What do you mean, change in the child's behavior? Do you mean in terms of the child's improvement to be reported on, or do you mean the desired change to happen, or all that?

Clifford: I really mean neither one. What I mean is that the teachers ask the parents to let them know if there are any changes in the home that might affect the child's behavior. The family might move three times in one school year and remain in the same school. Some of them run from bill collectors constantly. The male may go in and out of the home or a new male person may join the home, that happens a lot — changes in boyfriends — and the child changes as this happens. When the teacher learns of particular family problems she lets me know and I make it my business to talk to the parents. The act of letting them talk and maybe cry, with me just listening, seems to make them feel better.

Kahn: How does nutrition and teacher preparation become an active part of your operation in working with people?

Clifford: First, the teacher has a hand in what is ordered for the kitchen. There are certain things they don't want because they are not nutritious. Second, at the beginning of the year we have a nutrition seminar for the parents where we talk about what food does to a child and the child's body. We talk about caffeine in pop, we talk about sugar. This year we did what we called a Montessori commercial about insecticides used on foods and how to wash and cook foods. Then we give the parents a list of things that are nutritious to eat and they sign up to bring in nutritious snacks for the class.

Kahn: In terms of the Montessori Method, you have oftentimes said it is difficult for these teachers to adjust to the urban environment. You told me some things already about eye contact, swear words, biting, hitting, acting out, dealing with extreme conditions in the home, etc. But in terms of the actual presentations themselves, have you modified the pedagogy?

PARENT INVOLVEMENT

Clifford: No, there have been no modifications of any pedagogical AMI methods at all. Modifications cause problems. If you change something, adapt it for a child, it's almost like saying the child can't learn, and that's not true. The child can learn anything. In fact, I find that I must stay on the teachers about not modifying anything — not breaking down the vocabulary. Don't call the trapezoid anything but what it is. There is an ongoing controversy over changing standarized test questions to accomodate the urban dialects. If you do that, what are you doing? You're changing the criteria for people and people are supposed to be the same no matter where they are. So just because we have children from an environment where they might not see and experience all the things that other children see and experience, that means that it's up to us to see that they experience it. We have lots of field trips. Once a month we've got to get out of here and see something or else they won't get to see it. In three years the children experience a lot. We set up scholarship programs with other areas as an alternative measure. But I am totally against modification.

Kahn: What do you do about child abuse?

Clifford: We give the teachers two in-service meetings where outside agents come in and talk about identification of children who have been abused. There are different kinds of abuse: sexual abuse, verbal abuse, and physical abuse. Teachers tend to be reluctant to make out a report on a child who is acting out in school because they don't want the child to get a beating at home and be in worse shape than before. We get to the point where we just say to the parent, "Now I know you're not going to go home and give this child a whipping because he doesn't deserve one, but I wanted you to know that he's doing these things." Then you give the parent a suggestion of what they can do in the home to deal with the problem. A lot of parents, especially black parents, tend to feel that if you spare the rod you spoil the child. We talk to them about how this affects the children to the point where they won't do anything until you holler and spank them because that's all they're used to. The first year parents have the most trouble with this. If we find a child who we think is being sexually abused, the teacher informs me and I have a conversation with the parent. The teacher and I make a determination as to whether it should be reported to an outside agency. If I do call, they usually do go out and investigate.

Kahn: We've talked about child abuse and your work with parents. What is your ultimate goal as you work with families here at the school?

Clifford: The ultimate end is to try to improve the family's understanding that education helps integrate the family into society and to attain a better life. We try to build confidence and teach skills to help parents improve their roles. It's hoped that through the parent workshops the parents will gain a better understanding of good nutrition for the child, build a network among themselves, build community support, and find resources — places to take their children. They learn they can't leave children on their own just because they're ten or they look older and aren't babies anymore. They gain a sense that they can talk to teachers, that they can be friends. They can and should follow their child through the educational process like most suburban families already do. This is what we try to do. Research shows that the three years of Montessori training at the preschool level and parent education workshops set a model that parents follow throughout the child's education. They actually initiate contact with teachers.

Kahn: How then do you maintain the idea of this mission with yourself and your staff? How do you keep the urban mission in sight?

Clifford: You keep it in sight because you keep them in sight. Instead of being an administrator to the teachers I am a friend to the teachers, they are a friend to the parents and I'm a friend to the parents.

We have events once a month — last night we just had the Community Chest which we have every fall. We have canapes and cake and an educational workshop to start up the year. I met great-grandparents and all kinds of extended family members. It's nice to touch them, give them a pat on the shoulder, give hugs to the people who need hugs. One mother just told me that she was so happy because she got an extra hundred dollars today and that she'll be able to pay on her tuition. Just to think that she wants to do that for her child is really admirable because there were clearly other things she could do with a hundred dollars. I think we keep the mission clear because the closer you get to the families the more you know that they really need and appreciate what you do.

I also think telephone calls are important and that home visits play a role. When children drop out we call to find out the situation and try to get them to return. Sometimes I have to make a call after the teachers make calls. The parents appreciate this and it keeps me in touch with them. They know that this isn't just another program that stops with the child. We care about them and we are always here for them.

Kahn: How do you get everyone, including yourself, to keep the urban mission in sight?

Clifford: We are turning out independent, intelligent, capable human beings who will add new dimensions to a new world, and it's the productivity of those children that really motivates the staff. They can see the change within two years, both with the child and the family. The community also changes. I saw a ninth grader the other day. He said, "Hey, Ms. Clifford." I looked up and he was so big I didn't know him. And then all of a sudden his face came back. He was one of the children I had over on the other side of town in my kindergarten class. And here he was at a Junior High School over here and doing OK. He's polite and mannerly and coping with the streets, not necessarily as a part of the streets, but he can deal with what's going on. I asked him what he was doing. I had seen his mother earlier and she had said he's just not challenged enough at school. I told him he just had to challenge himself. So now he drops by after school to say "hi" and I ask him what's up. It's nice to know that older youngsters realize they have a role model to go back to. It also makes you aware that the whole community can and is changing because there's one little place where children learn in their formative years. Their behavior then influences others.

Kahn: It's important what you said about the extended family — your influence goes beyond the immediate school and family scene.

Clifford: That's right. It's the seeds that Dr. Montessori talked about. We are sowing seeds.

INTRODUCTION

EXPANSION

PLANNING PROPOSALS

RELOCATION

SCHOOL ENHANCEMENT

SITE SELECTION

Montessori expansion requires a slow, year-by-year, phase-in approach. Because Montessori cannot admit older non-Montessori children, enrollment projections must be formulated carefully. As programs grow, relocation and independent administration may become necessary. A comprehensive planning document can ensure a successful transition.

EXPANSION

EXPANSION: PLANNING PROPOSALS

The national statistics in a 1988 review of Montessori research (Kahn, Boehnlein, Villegas, 1988 NAMTA Study) indicate that almost seventy percent of Montessori public schools predict expansion — half by grade level and half by adding buildings. Only four percent of the schools indicate that they are shrinking. The survey shows new programs are being established at the rate of about six to ten school district programs per year in 1988 and 1989. In relation to use within the districts, Montessori is in great demand, with two-thirds of the Montessori schools claiming to have waiting lists ranging from fifty to over five hundred children.

USEFUL PRINCIPLES FOR MONTESSORI EXPANSION IN THE PUBLIC SECTOR

Multi-age groups

Montessori programs conventionally start at age three with multi-age groups expanding one year at a time. Expansion works best if multi-age classrooms are maintained as much as possible and consolidated within Montessori conventions: *preschool ages three to six; lower elementary ages six to nine, upper elementary ages nine to twelve.* The admittance of children over age four without Montessori background should be limited.

Pyramid Structure

Student attrition after age four cannot be replaced in a Montessori system. This is because Montessori has a rigorous curriculum of indirect preparation which assumes certain habits of learning, independence, and special understanding of the materials. Although successful admissions of two or three students per class without Montessori background can be facilitated, latecomers to Montessori must be screened carefully for both social and academic skills so that they will not be excluded from the established pace and social constellation of the class.

Generally Montessori schools deal with their attrition by utilizing a pyramid structure where, proportionate to the school pupil retention patterns, the lower levels of the program have more students in order to feed the declining numbers at the upper levels. This provides a maximum servicing of new entrants at the starting level and allows for natural attrition to occur without compromising the program with late entrants who do not have Montessori experience.

Curriculum Planning

Although curriculum is internally consistent within the AMI Teacher Trainer program, expansion should consider some advanced program planning. There will be some variety of training backgrounds which should be balanced by curriculum dialogue and presentations among the faculty as to scope, sequences, and skill levels within the school's Montessori program. If a school is expanding one year at a time, general curriculum goals should be committed in writing ahead of the school year to guarantee full Montessori realization appropriate to expanded levels. This assumes that the existing Montessori program is already establishing clear curriculum goals which still allow for classroom interpretation related to individual children.

EXPANSION

Personnel Management

Montessori teacher-hiring requires careful planning. Expansion sometimes requires hiring Montessori teachers without state teaching credentials. For this reason, it is important to arrange a grace period with personnel offices for obtaining a state teaching license. Grace periods extend from about eighteen months to two years — or however long is necessary, as long as a minimum of six credits towards the state credential are taken each year. Teacher unions can present obstacles when hiring Montesssori trained teachers over more senior teachers within the system. It is essential that unions recognize Montessori training as an indispensable qualification for doing Montessori education.

It is also important to be aware of national training timetables in order to establish enough lead time to train teachers. Many schools utilize summer training programs which may take more than one summer. Partially trained teachers may need to rely on pedagogy other than Montessori in their classrooms until they have the complete Montessori point of view (see Chapter Four: Implementation).

As elementary programs expand, it is common practice that faculty move with the children to each successive grade. The current teachers, who know the children and who are experienced, are preferred candidates if they are perceived by their principal and parents as suited to the older child. The nine to twelve class requires considerably more preparation time and organization, and the more experienced teacher is better qualified to accomplish the work.

Building Conversion to Montessori

In certain situations, Montessori expands within a building by converting a non-Montessori section year by year. Montessori teachers and non-Montessori teachers must work as one staff while maintaining separate parent meetings, curriculum discussions, and schedules dealing with unique Montessori issues. Although Montessori may have distinct advantages over the building curriculum approach which it is gradually displacing, it is best not to oversell the program with non-Montessori staff present. Furthermore, non-Montessori staff many times become interested in Montessori and may desire Montessori training. Making such an option available improves overall building morale.

Materials

Since expansion involves capital expenditures of close to $25,000 per class including furniture, careful projections should be made to make sure that the district will accommodate the anticipated "start-up" costs. Program expansion may also have hidden costs, which include more books, additional specialty teachers, additional office personnel, etc.

EXPANSION

RELOCATION

When a Montessori school-within-a-school comes of age and its numbers appear to be increasing beyond what a mother school can accommodate, it may seek to relocate to its own facility. A case for relocation can often be made if Montessori split locations existing throughout a city can come together under one roof.

Relocation is a positive move which will allow the program to develop a unique Montessori identity by being at one site. Staff teamwork, goal setting, program continuity, and clarity of mission are supported by the Montessori program having its own building. The program is removed from the stress of comparisons and pettiness which might occur when a Montessori and non-Montessori program compete for resources within the same building.

IMPORTANT RELOCATION FACTORS

Program Size

When consolidating as one school, the developing Montessori program may require more support than its program enrollment can justify in terms of library, assistant staff, a full-time principal, auxiliary services, fine arts, etc. Yet initially, as an experimental program, it may need special exemptions to accommodate upfront costs of materials, expanded program supervision (see Chapter Four, Appendix 7), and consultation. The Montessori program must gain the credibility that comes with fully equipped operations that resemble other public schools in the district while still maintaining the uniqueness of Montessori programming. To fully anticipate all needs, the program size must be projected over five years in order to justify allocation of resources.

Relocation Site

The choice of location must consider the convenience of present and future clientele. Pinpointing neighborhood residences of current families and private Montessori schools will help justify the relocation site. Simple demographic studies should include neighborhood racial statistics to encourage voluntary desegregation, existing early childhood programs, nearby private schools, housing projects, church organizations sympathetic to early childhood education, and political contacts. The location of the new school is dependent on individual district needs.

Budget

A five year budget corresponding to enrollment projections needs to anticipate staffing, new classroom materials, library, and building refurbishing including shelving, office equipment, science lab, athletic equipment, and audio-visual needs.

RELOCATION
EXPANSION

Facility Description

Most buildings will accommodate Montessori. The facility description will need to consider desired outdoor area, size of classrooms, window height, restroom accessibility, media accessibility, etc. Although Montessori programs do work in open classroom spaces, self-contained classrooms still provide privacy, quiet, and minimal disruption which some teachers might prefer over the aesthetic advantages of the open classroom. Private cloakroom space, wet space with water source, and low windows are excellent features for a primary program (see Environment, Chapter Two).

Other

If the program is expanding into new levels (lower elementary, upper elementary), a description of mission, orientation, and curriculum for the advancing level will enhance the request for physical space. (You may wish to include the curriculum programs included in this publication.)

Appendix 1: Alternative Montessori Program Relocation Brief — Vancouver Public Schools, Vancouver, British Columbia, Canada

All planning aspects of an expansion program are included in a clear statement of programming needs, physical environment needs, elementary goals, retention and growth statistics.

ALTERNATIVE MONTESSORI PROGRAM

RELOCATION BRIEF

November 1986

Prepared by
Columbia Association of Montessori Parents

INTRODUCTION

On March 10, 1986 the VSB Montessori Advisory Committee was informed by Facilities Services, "...that the present site would accommodate a maximum of 3 classes ... expansion would require a complete program re-location." There are now 3 classes at the present site and expansion is scheduled for next year.

At the Montessori Advisory Committee meeting October 20, 1986 the possibility of remaining at Nightingale for the 1987/88 school term was broached. Two options for providing classroom space were mentioned: use of the art room and relocation of the district ESL class. Concerns regarding these two options include:

- the possible adverse effects upon the entire school's art program in order to accommodate the additional Montessori class
- a one year postponement of relocation might adversely affect Nightingale's enrolment if the ESL class is removed in 1987/88, followed by the Montessori program in 1988/89. Also, students within Nightingale's catchment area would likely continue to enrol in this alternative program, further reducing enrolment in Nightingale's other classes.

MOST IMPORTANTLY, the program has had difficulty attracting students with previous Montessori experience. Parents have stated that they elected to keep their children in private Montessori programs until a more central location is identified with an assurance of expansion. These factors (location and assurance of expansion potential) are of concern if the VSB is interested in attracting children from the private sector. The ideal site therefore, would provide adequate classroom space for future expansion should the VSB incorporate this program on a permanent basis. This would encourage enrolment during the final year of the pilot project, and provide a long term stabilizing effect.

CONSIDERATIONS

In response to the Facilities Services report and the concerns raised by Montessori parents, the Columbia Association of Montessori Parents (CAMP) would like to request that the Montessori program be relocated in September 1987 to a location in closer proximity to the majority of Montessori pre-schools which are potential feeder programs. (see location map page 15)

Relocation considerations include the following key areas:

1) the short and long term needs of the Vancouver program (page 5)

2) the physical environment required for an elementary Montessori program (page 7)

3) the goals of Montessori elementary education (pages 8 & 9)

SHORT AND LONG TERM NEEDS OF THE VANCOUVER PROGRAM

This is a district alternative program. The majority of the children enrolled in the Montessori classes require transportation to and from school. Families commute from all over Vancouver as well as adjacent municipalities. At the present time most of the parents are employed, many are single parent families or families in which both parents work. Survey results indicate that 66.5% of the children will need out of school care and 63% of the children have younger siblings who will be attending Montessori preschool and will later enroll in the alternative program.

A questionnaire was distributed to parents in an effort to assess the needs of the Montessori program as they relate to the anticipated relocation of this program. The following points summerize the findings:

1. Before- and after-school care for children of working parents

2. On site pre-school facilities for siblings (to help keep the family unit intact)

3. One central site, capable of accommodating all future expansion projections. (Repeated relocations would be detrimental, resulting in an unstable atmosphere.) The ideal site would have classes phasing out as the Montessori program expanded.

4. Long term planning for a gradual, controlled growth pattern

5. Supportive and cooperative atmosphere

6. Accessibility to as many public transportation routes as possible, to allow older students to commute

7. Access to support services (LAC, Teacher/Librarian and ESL)

8. A location with drop-off and parking areas

9. The ideal location would have access to a community centre to allow swimming and skating programs for grades 1-7.

PHYSICAL ENVIRONMENT NEEDS

The "ideal" site would have:

- space for individual, small group and whole class learning activities
- mobile furniture with both group and individual work tables
- adequate shelving for display of materials
- low sink units
- pin-up boards at children's eye level
- easy access to a public library for extensive research projects at the intermediate level in addition to a well established school library
- adequate facilities for art, science experimentation and a full nutrition program
- outdoor area large enough to accommodate rigorous physical activities and other outdoor education programs such as gardening
- close proximity to parks or wooded area for nature studies

GOALS IN SUMMARY

- to help children develop their personalities in accordance with their nature and potential at their own pace. The aim is always the formation of the total personality, not of independent functions or processes.
- to achieve the optimal relationship between the child and the adult as described by Dr.Montessori
- to provide an environment in which competencies are fostered through repetitive experiences of success; failure is not emphasized
- to respect the self-directed activity of the child
- to strive towards a cultural environment which will enlarge the child's cultural horizons to allow intellectual as well as moral development
- to allow freedom of movement, and encourage vigorous physical activity and outdoor work
- to encourage intrinsic motivation and self-education
- to encourage cooperation and accept (but not encourage) competition
- to develop an interdisciplinary curriculum to meet the needs of the growing child
- to promote a home/school environment consistant with the Montessori philosophy

GOALS OF MONTESSORI ELEMENTARY EDUCATION

The following excerpts are from 'Looking Ahead to Montessori Elementary' and 'Identifying the Elementary Environment' by David Kahn, Vice-President of the North America Montessori Teachers Association (NAMTA). (underlining has been added).

The Elementary environment reflects a new plane of education for the Montessori child. The environment should strike the imagination and lead to abstraction. The adult (teacher/director) functions as the link between the prepared environment and the child. "The curriculum is interdisciplinary where concepts of biology, geology and history converge on the study of life's evolution from the origin of the universe to the emergence of man and civilization. The child's studies stem from spontaneous humanistic questions which [Dr.] Montessori thought were universal to all children. Who am I? Where do I come from? What is human about humans? What are universal human needs? How do I cooperate with the world?

"The curriculum is open ended, but the classroom defines itself through certain key materials which utilize scientifically classified facts as a means of widening the abstract outreach of the child. Each key detail relates to the whole. The key then becomes an associated fact." "The natural sciences lead to the social and physical sciences. Math and geometry concepts flow from basic number operations moving through Euclidian geometry to solid geometry always on a fully integrated basis. Language becomes the final synthesis of all experiences with creative writing and grammar analysis built on the cultural content of the curriculum."

Dr.Montessori observed that the elementary child is characterized socially by a marked development of the "Clan" instinct. They enjoy group activities. Intellectually the program moves away from the concrete emphasis of the pre-school years and strives to allow abstraction and the imagination to reach its fullest potential. The indoor environment points to the outside world and the exploration of the outdoor environment encourages further research indoors. Freedom of movement and outdoor work in a safe, secure and orderly setting are encouraged.

CONCERNS ABOUT GROWTH

CAMP has concerns regarding the growth of this program. Ideally there would be controlled growth with monitoring of student distribution throughout the grades. The proposal on the following page demonstrates such a growth pattern. This example:

- deals with attrition

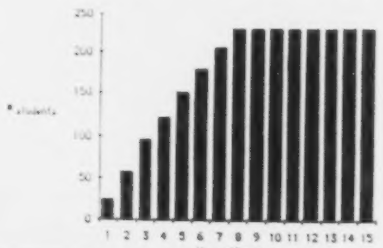
- allows for intake of students without Montessori experience at the kindergarten and grade 4 level (the beginning of the second three year elementary cycle)

- attempts to control the size of the program

- insures stability within the program by suggesting a maximum number of students at each grade level

- allows for intake of students with Montessori experience during the 3 year cycles (Gr.1-3 and 4-6)

PROJECTED GROWTH OF MONTESSORI PROGRAM (proposal)



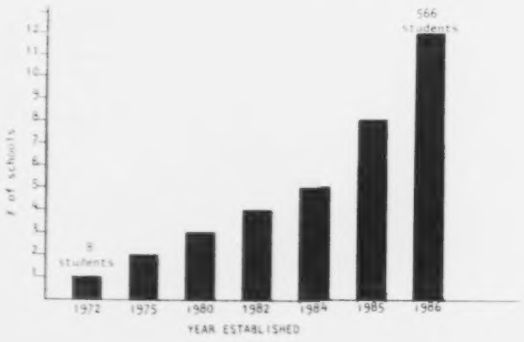
TOTAL ENROLMENT,
INTAKE AND GRADE DISTRIBUTION

YEAR / GRADE	K	1	2	3	4	5	6	7	INTAKE	TOTAL ENROLMENT	NUMBER OF CLASSROOMS
1985	15	9							24	24	1
1986	24	25	10						27	55	3
1987	31	28	28	10					38	97	4
1988	22	31	28	28	12				24	122	5
1989	22	27	31	28	30	12			28	150	6
1990	22	25	27	31	32	30	12		29	179	7
1991	22	25	25	27	32	32	30	12	25	205	8
1992	22	25	25	25	41	32	32	30	39	232	9
1993	22	25	25	25	30	41	32	32	27	232	9
1994	22	25	25	25	32	30	41	32	29	232	9
1995	22	25	25	25	32	32	30	41	29	232	9

CLASS GROUPINGS (once maximum of nine classes is reached)

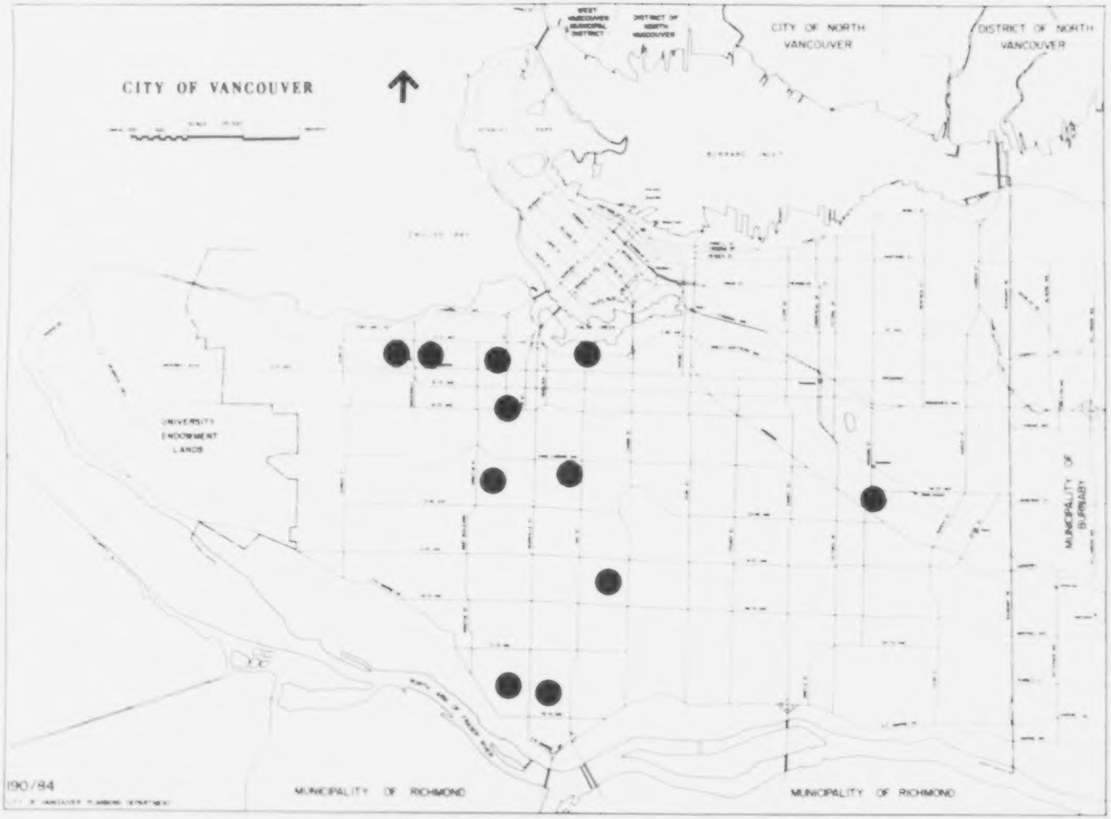
one kindergarten (transition)
three primary classes (grades 1,2,3)
five intermediate classes

EXPANSION OF PRIVATE MONTESSORI SCHOOLS IN VANCOUVER



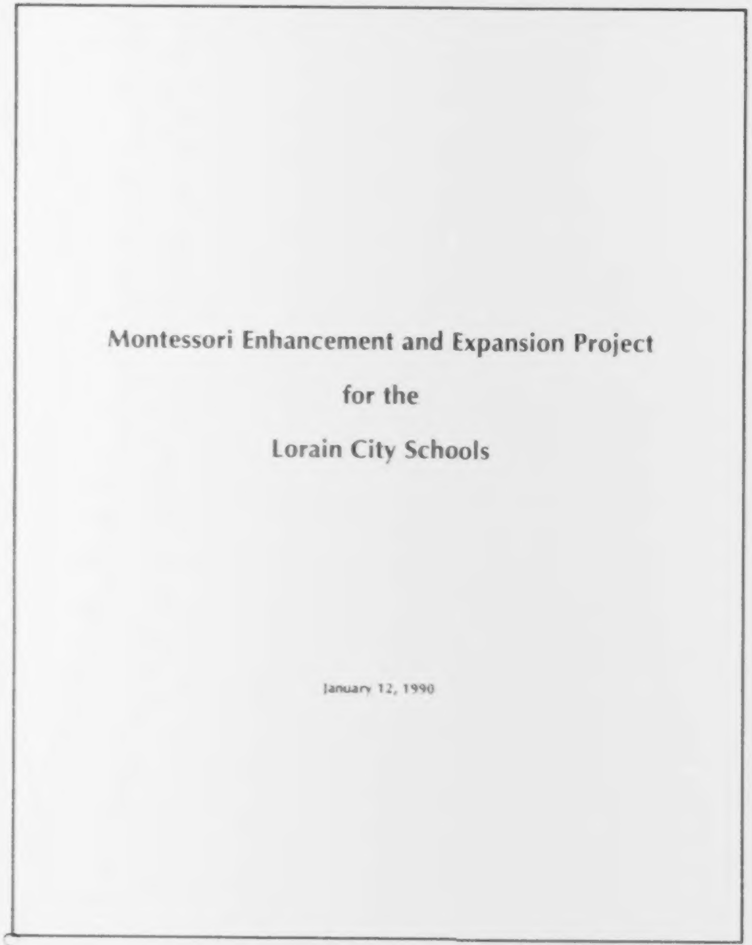
VANCOUVER PRIVATE MONTESSORI PROGRAMS

			year estab.	student capacity
1.	Vancouver Montessori	1545 W. 62 ave	1972	171
2.	Montessori Daycare	2091 W. 8 ave	1975	25
3.	Family Montessori	1099 Sitka Square	1980	40
4.	" site 2	3996 W. 17 ave	1984	40
5.	Ivy Montessori	1811 W.16 ave	1982	40
6.	" site 2	c/o Gordon Elem 2896 W. 6 ave	1985	40
7.	Community Montessori	2240 Guelph st	1985	40
8.	Plum Blossom Daycare	619 W. 45 ave	1985	25
9.	Westside Montessori	4157 Oak st	1986	40
10.	East Vancouver Montessori Daycare	4850 Gothard st	1986	25
11.	Marpole Bilingual M.	1296 W. 67 ave	1986	40
12.	Kerrisdale Montessori	Arbutus 28 ave	1986	40


CITY OF VANCOUVER
WEST VANCOUVER MUNICIPAL DISTRICT
DISTRICT OF NORTH VANCOUVER
CITY OF NORTH VANCOUVER
DISTRICT OF NORTH VANCOUVER
UNIVERSITY ENDOWMENT LANDS
MUNICIPALITY OF BURNABY
190/84
MUNICIPALITY OF RICHMOND
MUNICIPALITY OF RICHMOND

Appendix 2: Montessori Enhancement and Expansion Proposal – Lorain City Schools, Lorain, Ohio

An excellent funds development proposal for training support from foundations for Montessori teachers, this proposal requests almost $200,000 for start-up in wake of non-renewal of magnet school funding.

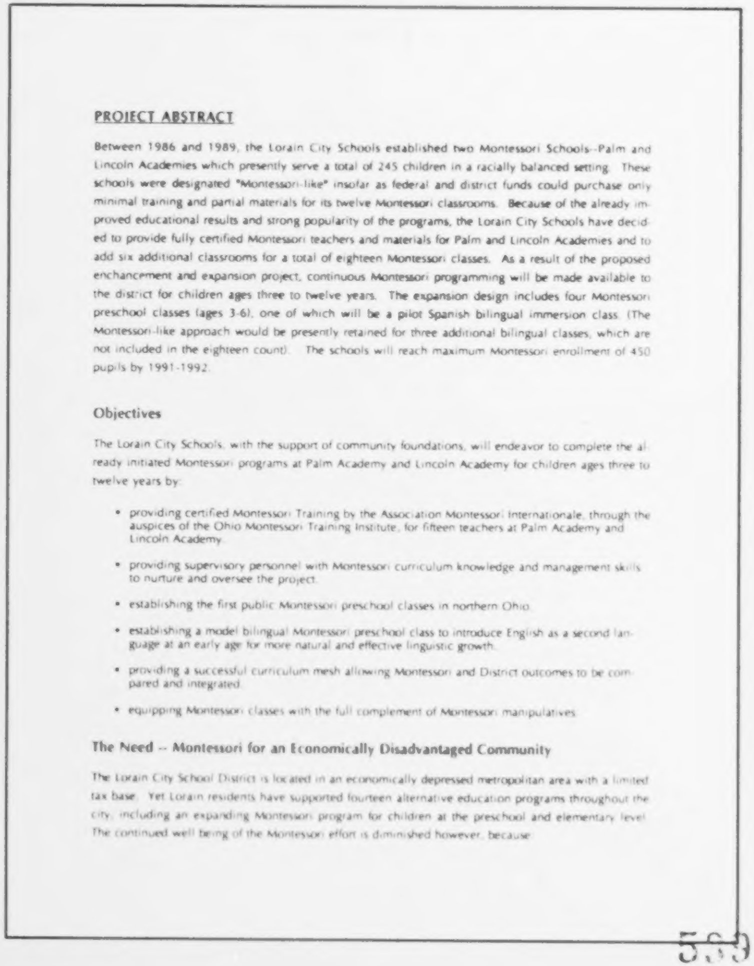


Montessori Enhancement and Expansion Project

for the

Lorain City Schools

January 12, 1990



PROJECT ABSTRACT

Between 1986 and 1989, the Lorain City Schools established two Montessori Schools--Palm and Lincoln Academies which presently serve a total of 245 children in a racially balanced setting. These schools were designated "Montessori-like" insofar as federal and district funds could purchase only minimal training and partial materials for its twelve Montessori classrooms. Because of the already improved educational results and strong popularity of the programs, the Lorain City Schools have decided to provide fully certified Montessori teachers and materials for Palm and Lincoln Academies and to add six additional classrooms for a total of eighteen Montessori classes. As a result of the proposed enchancement and expansion project, continuous Montessori programming will be made available to the district for children ages three to twelve years. The expansion design includes four Montessori preschool classes (ages 3-6), one of which will be a pilot Spanish bilingual immersion class. (The Montessori-like approach would be presently retained for three additional bilingual classes, which are not included in the eighteen count). The schools will reach maximum Montessori enrollment of 450 pupils by 1991-1992.

Objectives

The Lorain City Schools, with the support of community foundations, will endeavor to complete the already initiated Montessori programs at Palm Academy and Lincoln Academy for children ages three to twelve years by:

- providing certified Montessori Training by the Association Montessori Internationale, through the auspices of the Ohio Montessori Training Institute, for fifteen teachers at Palm Academy and Lincoln Academy.
- providing supervisory personnel with Montessori curriculum knowledge and management skills to nurture and oversee the project.
- establishing the first public Montessori preschool classes in northern Ohio.
- establishing a model bilingual Montessori preschool class to introduce English as a second language at an early age for more natural and effective linguistic growth.
- providing a successful curriculum mesh allowing Montessori and District outcomes to be compared and integrated.
- equipping Montessori classes with the full complement of Montessori manipulatives.

The Need -- Montessori for an Economically Disadvantaged Community

The Lorain City School District is located in an economically depressed metropolitan area with a limited tax base. Yet Lorain residents have supported fourteen alternative education programs throughout the city, including an expanding Montessori program for children at the preschool and elementary level. The continued well being of the Montessori effort is diminished however, because:

- the teaching staff has received only limited "in-house" training and has an incomplete knowledge of Montessori technique and materials,
- of a 24% tax base reduction (from $609 million to $466 million); the largest portion being industrial tangible personal property tax reductions,
- of the loss of a $3.7 million Federal magnet grant due to a 2 year funding cycle,
- trained Montessori teachers are not available due to a national shortage of Montessori teachers. For this reason, the Lorain City Schools must provide training for their Montessori teachers utilizing a localized training program.

The district is suffering a financial crisis and cannot support the one-time training and material purchase costs that the project start-up requires. In order to continue its innovative city-based program for desegregation and strategic restructuring of curriculum, the district will need to bring its developing Montessori model to completion.

The Solution

The Lorain City Schools, in conjunction with the Ohio Montessori Training Institute and Cleveland State University, is seeking funding to support certified Montessori coursework for fifteen teachers, two principals, and one supervisor. In addition, nine assistants, support personnel, and counselors will receive selected coursework. Curriculum implementation and on-site supervision is included in the training package.

The Request

The District needs outside funding in order to equip the Montessori school and sponsor Montessori training for its current teaching staff. For this reason, the Lorain City School District respectfully requests of the Nord Family Foundation a two-year grant in the amount of $43,800 to be used to accomplish this goal as outlined in the following detailed proposal.

To date, the District has expended $95,089 for Montessori equipment and supplies. The annual cost of staffing the Montessori program (in 1990-91 figures) is $731,046. This cost includes teachers and teacher aides; building costs and administrative costs are not included.

The Lorain City School District is committed to maintaining the Montessori program (age 3-12) as a means of providing students with an alternate type of education -- an enrichment opportunity that tends to be reserved for upper economic or academic level, majority families, and primarily available only in private school settings -- a child-centered environment where students can continuously progress at the child's individual rate -- an ideal learning environment for at-risk children. The District's financial crisis is real: the $30,544 cost for teacher substitutes - which will be needed to release the Montessori teachers during their practicum experience which, unlike the summer training sessions, is held during the school year - will be absorbed internally. The remaining $161,800 must be sought elsewhere.

The Lorain City School District is formally requesting a grant from The George Gund Foundation, in the amount of $56,000, to help support the **Montessori Age 6-9 Component**. Such funding will provide the $36,400 needed to support the training of seven teachers and the $19,600 needed to purchase supplies and materials for the seven age 6-9 classes. Due to the large nature of this request and the tri-summer training schedule, it is suggested that funding be considered on a 3 year basis: 35% for each of the 1990 & 1991 summers and the remaining 30% for the summer of 1992.

ESTIMATED FUNDING SOURCES & ANTICIPATED REQUESTS

Lorain City School District	Substitutes	$30,544
Nord Family Foundation	Preschool Component	43,800
The George Gund Foundation	Age 6-9 Component	56,000
The Martha Holden Jennings Foundation	Age 9-12 Component	54,000
The Community Foundation of Greater Lorain County	Montessori overview	4,000
The Stocker Foundation	Montessori overview	4,000
	Total	$192,344

INTRODUCTION

The Lorain City School District is one of a small number of public schools nationwide that emphasizes the Montessori approach to classroom instruction. Two schools, Palm and Lincoln, have been established as Montessori Magnet Academies. The successful operation of these magnets is crucial in effectuating Lorain City School's unique instructional environment and in complying with Federal court-ordered desegregation.

Palm Academy not only provides for the desegregation of Hispanic students, but also offers English for Hispanic children in need and **Spanish immersion** - as a foreign language - for all Montessori students. The structure of Lorain's Montessori Program is such that **a multi-age, racially balanced preschool** for 3, 4 and 5 year olds will be developed (through the auspices of this proposal). After completion of this preschool unit, the children will then progress through the primary grades (1-3) at Palm Academy, and attend Montessori intermediate grades (4-6) at Lincoln Academy. The traditional grade levels will eventually be restructured so that all Montessori students will be in a multi-age learning environment consistent with Montessori philosophy (3-6 year olds and 6-9 year olds will attend Palm Academy and 9-12 year olds will attend Lincoln Academy). In order to achieve these goals, six new units need to be established for the 1990-91 school year: four for 3 to 6 year olds - one of which will be bilingual Spanish - and two for 9-12 year olds.

Few Montessori certified teachers are available to fill Lorain's needs. The District employs many excellent teachers who, with further training, can meet the needed certification criteria. Three of the twenty-one Montessori teachers & administrators needed to accomplish program objectives possess such credentials. Eighteen need to be trained at the appropriate level. A tri-summer Montessori teacher training program is being offered by the Ohio Montessori Training Institute in cooperation with Cleveland State University specifically for Lorain City Schools. In exchange for participating in such training, teachers will be required to make a commitment to remain with the District for a period of 2 to 5 years.

The development of new programs require material purchases beyond the scope of everyday needs. Montessori materials and supplies are not readily available; the majority of the items are imported from the Netherlands by Nienhuis Montessori of California and are costly. The District has expended $95,089 to date for such materials and supplies. Outside resources must be secured for the remaining amounts.

In order to meet the above goals, Foundation support must be sought for:

- the creation of a Montessori preschool facility and educational opportunities for three and four year olds,
- the program expansion of Montessori units (6) at Palm Academy - 5 preschool and 1 age 6-9,
- the program expansion of Montessori units (2) at Lincoln Academy, and
- the establishment of a 3 summer training program for 18 Teachers/ Supervisors.

PROGRAM DESCRIPTION

The Lorain City School District, rich in cultural heritage, is unique among urban districts. Even though the system is in the more economically depressed metropolitan area of the county, its residents have chosen to demonstrate support for desegregation through the establishment of a magnet schools process which fulfills a Federally court-ordered Consent Decree. Palm and Lincoln Academies are two such magnet schools which are based upon the Montessori school of thought. The curricular goals, however, extend beyond the total Montessori experience to include language immersion and bilingual education (Spanish for all Montessori students and English as a Second Language for Hispanic children in need, respectively).

Palm Academy had been a closed building for two years and was reopened as a Montessori-like and bilingual language magnet in September, 1986. Due to continued community interest, the Montessori-like program was expanded to the higher grade levels during the 1988-89 and 1989-90 school years. In the initial year, 2 grade four classes were established; in 1989, 2 grade five classes were added. This expansion incorporated Lincoln Academy into the continuum.

The Montessori-like program was initially comprised of two classes each of an all day kindergarten, grade one, grade two and grade three. The newly conceived preschool component would change this to five classes - each consisting of a multi-age one-half day program for three, four, five and six year olds (one of which would be for preschool bilingual students in need of English as a Second Language skills). The five/six year olds would then remain for a full day session, hence the continuation of the full-day kindergarten program. Instruction, designed to meet the curricular requirements of the Lorain City School District, is incorporated into the Montessori program methods. This enables a child to easily adapt to any school setting. Although children have been successful when entering at the kindergarten level, according to the Montessori philosophy it is desirable that children enter the school experience at the age of three; therefore, the preschool concept.

Students are selected for Palm & Lincoln Academies by using a district-wide lottery process (new entrants are limited to the preschool and age 5/6 (Kindergarten) levels). This process accepts voluntary applications from all interested parents. Applications are first coded by grade level, ethnicity and sequence of receipt to ensure that all eligible applicants are given an equal opportunity to fill magnet school openings. Although there is no rigid criteria for selection, student interest, potential for normal achievement, suitable aptitude, and the ability to adapt to the Montessori environment are considered in the selection process.

The current program, and each classroom individually, is balanced by race and ethnicity according to district proportions, 56.6% -21.4% - 22%, representing White, Black, and Hispanic populations respectively. Students number 24 in each Montessori classroom; at the present time, there are 182 students in grades K-3 at Palm Academy, and 63 grade four and five students at Lincoln Academy (the program will be expanded to grade six for the 1990-91 school year). Lincoln Academy's enrollment of 63, as opposed to a full enrollment of 96, is due to attrition from the third grade at Palm to the fourth grade at Lincoln. The addition of new units at Palm will increase the number of Montessori students participating in the continuum from age 3 through 12 resulting in full Lincoln enrollment.

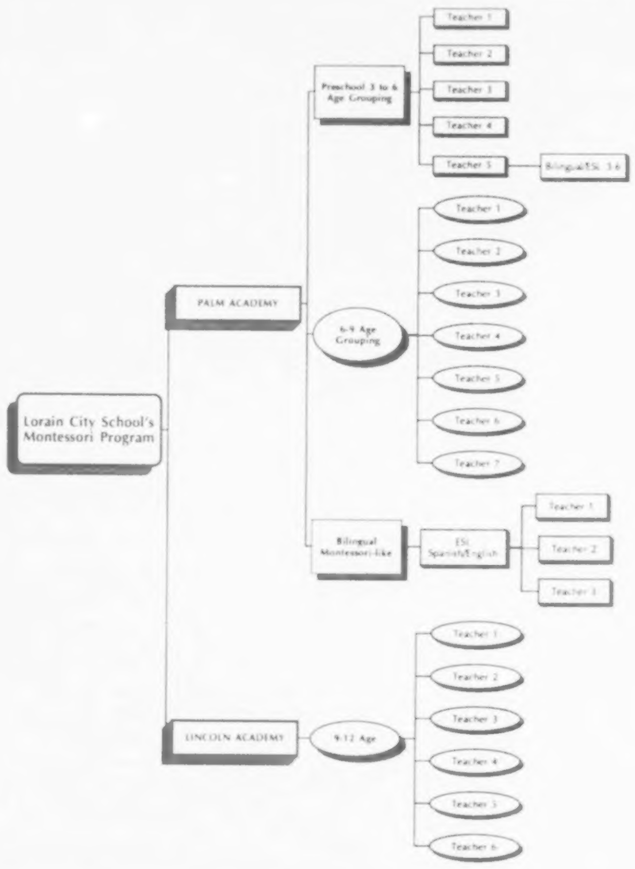
In Lorain City School's effort to become voluntarily integrated, the Montessori-like opportunity enabled two schools, historically of Hispanic enrollment, to attain a balanced racial composition, as well as, offer an innovative program well adapted to both a multicultural setting and to a new educational approach (in public schools) for low and middle socioeconomic children.

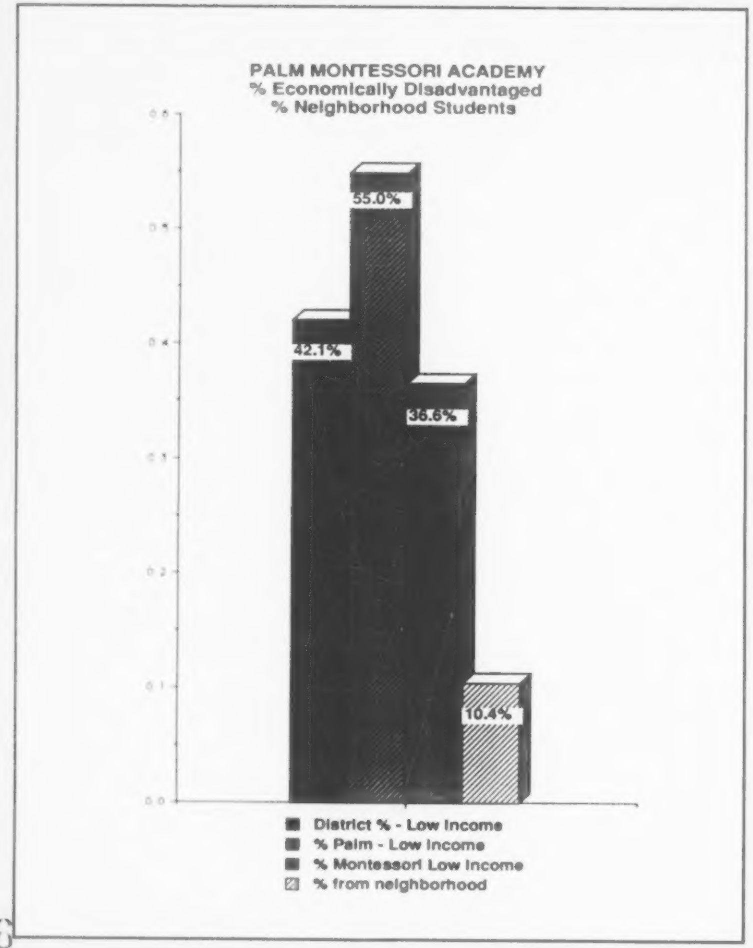
Literature indicates that the Montessori technique achieves positive results - that Lorain City School's magnet test scores show a significant percentage of students scoring in the "high performance category" in vocabulary, reading and math. This is also substantiated by the nationally-normed Comprehensive Test of Basic Skills (CTBS) scores from Palm Academy. Spring 1989 CTBS results show second graders, who had been in the Montessori program since kindergarten, scoring in the 82nd percentile in Reading, the 83rd percentile in Language, and the 94th percentile in Mathematics.

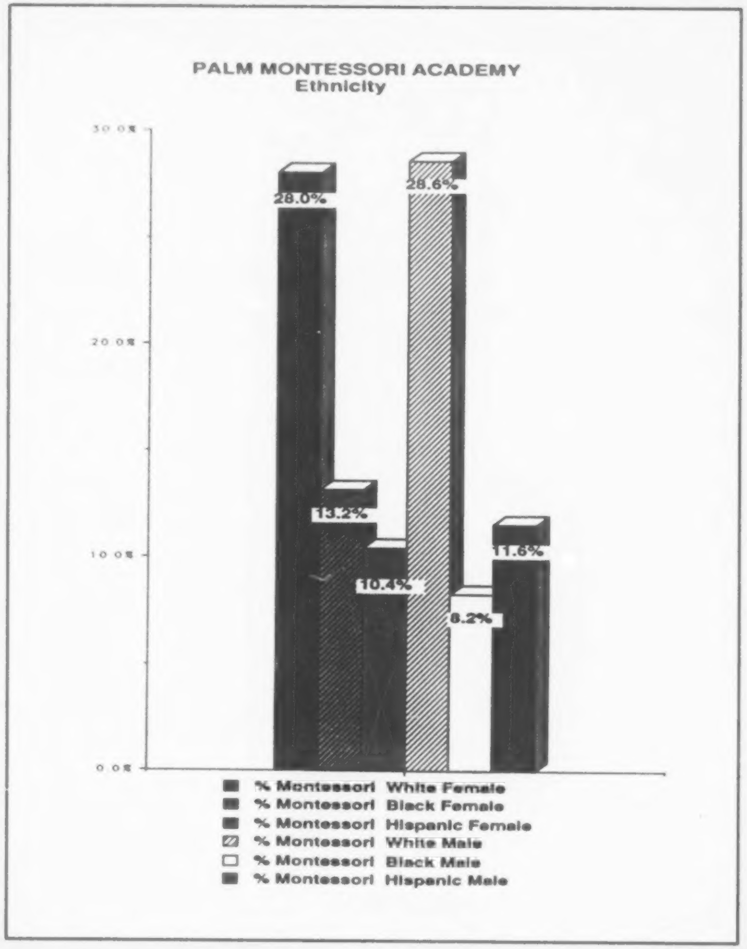
The following page is a visual representation of Lorain City Schools' Montessori program. Each teacher on this chart represents a class of twenty-five students.

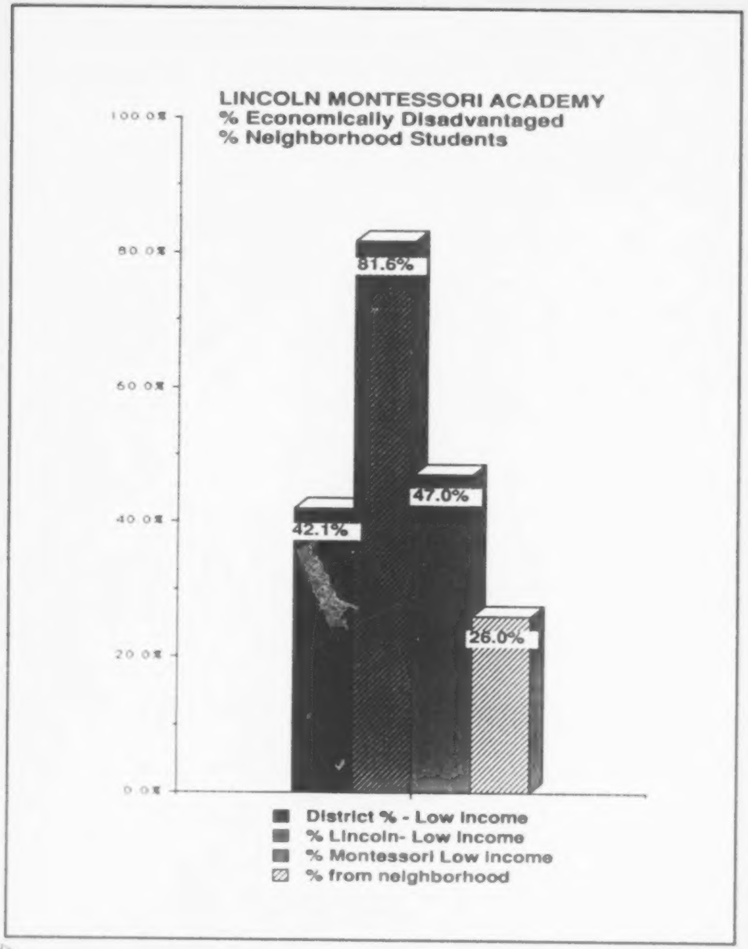
This chart is followed by a demographic presentation of Lincoln and Palm Academies. It should be noted that:

- 42.1% of Lorain City School students are economically disadvantaged (based upon the accepted criteria of free & reduced lunch counts),
- 55% of Palm's enrollment and 81.6% of Lincoln's enrollment are economically disadvantaged,
- 36.6% of Palm's Montessori enrollment and 47.0% of Lincoln's Montessori enrollment are economically disadvantaged, and
- the ethnic composition of both academies closely parallel the District's ethnic composition.

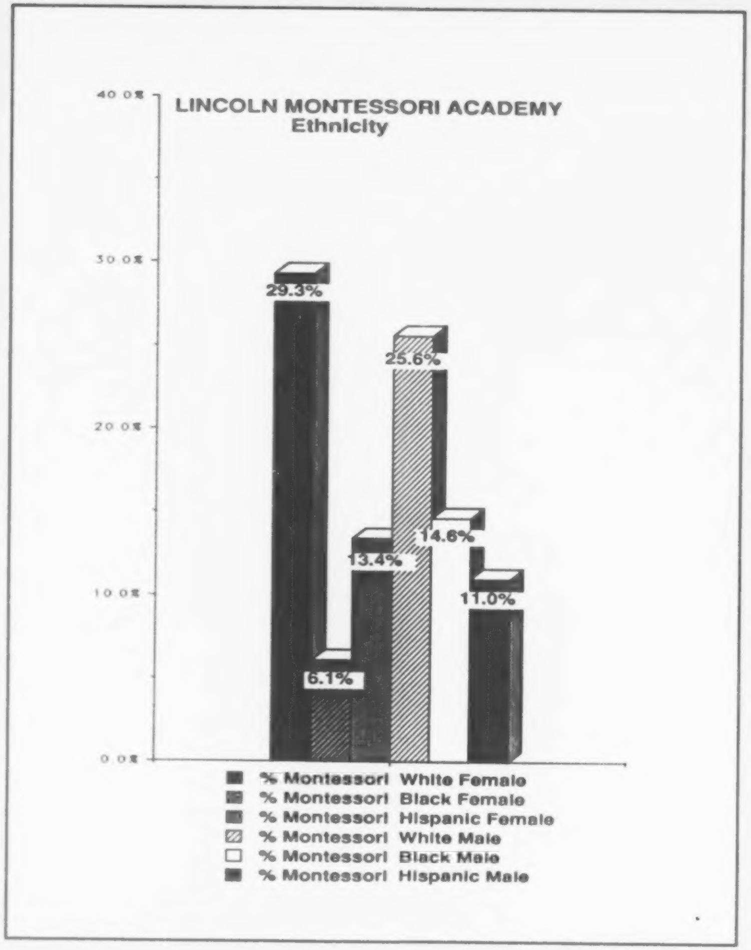

Lorain City School's Montessori Program
PALM ACADEMY
Preschool 3 to 6 Age Grouping
Teacher 1
Teacher 2
Teacher 3
Teacher 4
Teacher 5
Bilingual/ESL 3-6
6-9 Age Grouping
Teacher 1
Teacher 2
Teacher 3
Teacher 4
Teacher 5
Teacher 6
Teacher 7
Bilingual Montessori-like
ESL Spanish/English
Teacher 1
Teacher 2
Teacher 3
LINCOLN ACADEMY
9-12 Age
Teacher 1
Teacher 2
Teacher 3
Teacher 4
Teacher 5
Teacher 6


PALM MONTESSORI ACADEMY
% Economically Disadvantaged
% Neighborhood Students
0.6
0.5
0.4
0.3
0.2
0.1
0.0
42.1%
55.0%
36.6%
10.4%
■ District % - Low Income
■ % Palm - Low Income
■ % Montessori Low Income
▨ % from neighborhood


PALM MONTESSORI ACADEMY
Ethnicity
30.0%
20.0%
10.0%
0.0%
28.0%
13.2%
10.4%
28.6%
8.2%
11.6%
■ % Montessori White Female
■ % Montessori Black Female
■ % Montessori Hispanic Female
▨ % Montessori White Male
☐ % Montessori Black Male
■ % Montessori Hispanic Male



LINCOLN MONTESSORI ACADEMY
% Economically Disadvantaged
% Neighborhood Students



LINCOLN MONTESSORI ACADEMY
Ethnicity

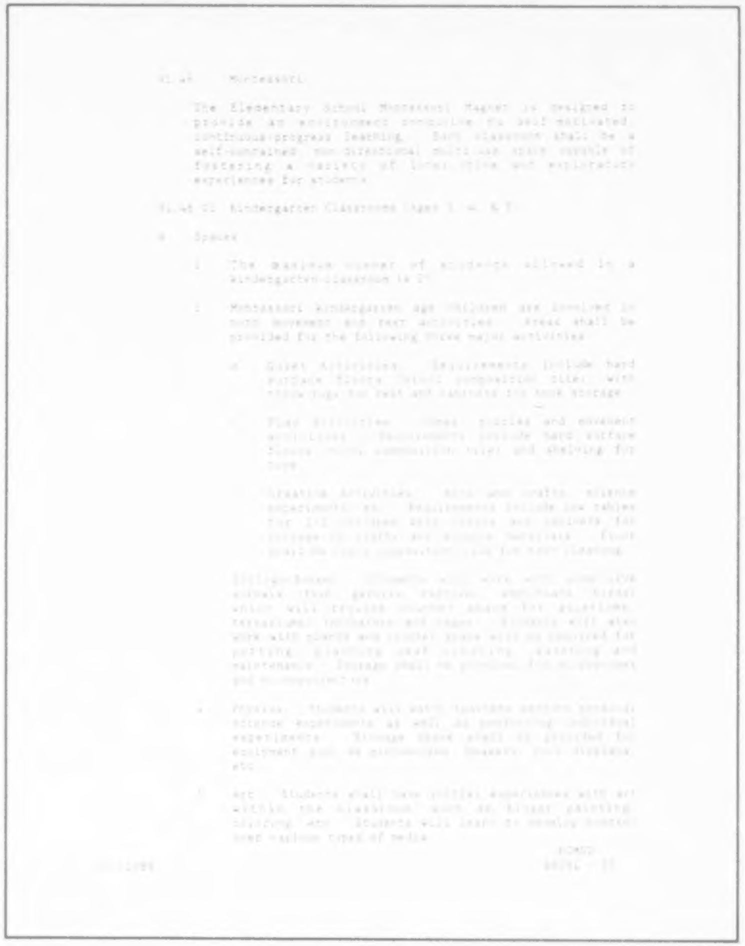
Appendix 3: New Faxon Montessori Magnet School Site Plan – Kansas City, Missouri

Formulated by parents, teachers, and community members, this short document, published here in total, contains one organization's planning, scope and timetable for a school. Although a number of references such as size of the kindergarten, separate classrooms for Special Ed., and computer lab are not in keeping with Montessori philosophy, the document is a concise and complete example of a magnet school site plan.

Please consult Implementation: Chapter Four, for cost and implementation suggestions for the real standards and needs.

Project Management Team
Kansas City, Missouri School District
Capital Improvements Program

Charles W. Felder



f. Music. Students shall have initial experiences with music within the classroom, such as singing, rhythmic exercises with wood blocks and sandpaper blocks, etc.

g. Outdoor Activities. Access to the outdoor environment is very important to the Montessori program. Students develop the responsibility required to play outdoors safely.

Direct access to outdoor areas is mandatory because without it, teachers have no control. A courtyard and protected area is preferable in an urban neighborhood. Protection from wind is important.

B. Adjacencies

1. Kindergarten classrooms shall be located on the ground level near the administration area and close to the main entrance of the building. Kindergarten outdoor play areas shall be directly accessible from kindergarten classrooms.

2. Isolate classrooms from noisy activities such as gym and cafeteria, as well as mechanical systems.

3. Isolate classrooms from visual distractions.

C. Special Requirements

1. Kindergarten Classrooms ([illegible] s.f. each)

a. In each classroom space shall be provided for two [illegible]-height folding-leg tables, [illegible] with [illegible] chairs each. Space for eight chairs shall be provided for the height of 3 year old children ([illegible] in.) and four chairs for 4-5 year old heights (11-1/2 in.). Tables may be used at opposite ends of the classroom for separate activities. Chairs should be wood in lieu of plastic or metal.

b. In each classroom, space for twelve 14" x 24" individual tables shall be provided. These tables shall be a variety of shapes such as rectangles, triangles, circles, ovals and trapezoids. Space for eight chairs shall be provided for the height of 3 year old children (10 in.) and four chairs for 4-5 year old heights (11-1/2 in.). Chairs should be wood in lieu of plastic or metal.

c. One girls' and one boys' toilet room in each classroom. Toilets shall be sized to accommodate 3 year old children (10 inches high). Locate a countertop with two sinks directly outside the toilet rooms. The sink shall be sized for the height of 5 year old children (24 in.) and shall be stainless steel with a gooseneck faucet with canopy elbow handles and shall have an acid drain with removable trap. One sink shall be sized for the height of 3 year old children (20 inches high) and shall be stainless steel with canopy elbow handles. Sinks shall have hot and cold running water. The countertop shall be 6'-0" long, and covered with acid-resistant material similar to plastic laminate. Formed top is desirable with a 7 inch round hole in center for towel disposal with a wastebasket directly below. Countertop(s) shall slope to sinks and have a 12" minimum backsplash of the same material. Floors and walls shall be water-resistant materials. Provide one paper towel and soap dispenser near the sink at height of 3 year old children (20 inches).

d. One drinking fountain in every classroom at the height of 3 year old children (20 in. high).

e. Provide open shelving around the perimeter of each classroom at 3-5 year old children's heights. Also provide freestanding shelving on casters to enclose the activity areas. Maximize amounts of shelving.

f. One wall clock (quartz movement) shall be mounted 6'-0" above the floor. The clock is an integral part of instruction and shall be located in a highly visible spot.

g. Storage (min. [illegible] s.f.) shall be provided for wood blocks, teacher made materials, Montessori equipment, art materials, musical equipment, etc.

h. Children at this age range from [illegible] to [illegible]. All furnishings, equipment and window heights shall be designed for the children.

i. All wall surfaces not utilized for cabinets, chalkboards, doors or windows shall be finished with tack surface material. Absorptive acoustical materials shall be used.

j. Ceilings shall be acoustical tile to reduce noise levels.

k. Windows shall be operable. Natural light is desirable with window treatment for "blackout" for audiovisual presentations.

l. In each classroom, provide a one-way mirror viewing port from the hallway at adult height for supervision and observation of children.

m. Each classroom shall be provided with a public address system connected to the administration area for both general announcements and private conversations.

n. In each classroom, provide one locked teacher's cabinet with wardrobe space and shelving.

o. In each classroom, provide one [illegible] adjustable height chalkboard. Chalkboard shall have tackwall and hangers at the top.

p. In each classroom, provide an adjustable height roll-down projection screen mounted on the wall in a highly visible location.

q. Provide electrical power for all equipment indicated. No computers are used in Montessori classes for ages 3-6. No [illegible] detection equipment will be necessary. Provide evenly distributed fluorescent lighting with switches located where teacher may easily access them.

r. Provide adequate ventilation, heating and cooling and exhaust for each classroom and toilet areas.

[illegible] First, Second, Third, Fourth and Fifth Grade Classrooms

A. Scope:

1. The maximum number of students allowed in a first, second, third, fourth and fifth grade classroom is [illegible].

2. Montessori elementary age children are involved primarily in movement activities. Requirements include hard surface floors (vinyl composition tile), shelving for crafts, books and science materials and individual desks, each with a chair.

3. Other activities are the same as those for kindergarten classes.

B. Adjacencies

1. First and second grade classrooms shall be located on the ground level, near the administration area and shall be closer to the LRC than the kindergarten classrooms. Outdoor play areas shall be directly accessible from classrooms or within a reasonable walking distance from a cluster of first and second grade classrooms.

2. Third, fourth and fifth grade classrooms should preferably be located on the ground level nearest the LRC and computer lab. This age group may be located on a second floor level, if site restrictions require it.

3. Isolate classrooms from noisy activities such as gym and cafetorium, as well as mechanical systems.

4. Isolate classrooms from visual distractions.

C. Special Requirements

1. Elementary classrooms: [illegible] s.f. each.

a. In each classroom, space for [illegible] individual desks each with its own chair shall be provided. Desks shall have adjustable legs.

b. In each classroom, provide space for four rectangular folding leg tables, [illegible] with six chairs each. Height of tables and chairs shall be sized for appropriate age group. Tables may be used at opposite ends of the classroom for separate activities.

c. Elementary classrooms shall have a similar shelving arrangement to that of kindergarten classrooms, except that more storage shall be provided due to the larger number of books used in successive classes. Shelving on casters shall be provided and will be located within the classroom by the students as they develop space consciousness. Students will be responsible to obtain and return their own materials from storage.

d. Toilets shall be grouped and readily accessible from a corridor. It is more important for first and second grades to be adjacent to toilet facilities. Locate a countertop with two sinks in each classroom. One sink shall be located at the minimum height of a child of each grade level. The other sink shall be located at the median height of a child of each grade level. The median height sink shall be stainless steel with a gooseneck faucet, canopy elbow handles, and an acid drain with removable trap. The minimum height sink shall be stainless steel with canopy elbow handles. Sinks shall have a hot and cold running water. The countertop shall be [illegible] long and covered with acid resistant material similar to plastic laminate. Formed top is desirable with a [illegible] inch round hole in the center for towel disposal with a wastebasket directly below. Countertops shall slope to sinks and have a 12" minimum backsplash of the same material. Floors and walls shall be water resistant materials. Provide one paper towel and soap dispenser near the sink at minimum height of a child of each grade level.

4. One drinking fountain in every classroom at the minimum height of a child of each age group.

5. Provide open shelving around the perimeter of each classroom at the minimum height of a child of each age group. Also provide freestanding shelving on casters to enclose the activity areas. Maximize the amount of shelving. Shelving for books shall also be provided adjacent to teacher's area.

6. One wall clock (Quartz movement) shall be mounted 6'-0" above the floor.

7. Provide a minimum of 100 s.f. of storage for audiovisual equipment and teacher or student materials.

8. First grade children range in height from [illegible] to [illegible]. Second grade and third grade children range in height from [illegible] to [illegible]. Fourth and fifth grade children range in height from [illegible] to [illegible]. Minimum mounting height for chalkboards is [illegible] above the floor for first, second and third grade children. Minimum mounting height for chalkboards is 30" above the floor for fourth and fifth grade children. All furnishings, equipment and window heights shall be designed for the range of height of the children of each classroom.

9. First, second, third, fourth and fifth grade classroom floors shall have approximately 40% vinyl composition tile and 60% carpet. Art and science areas, as well as areas around sinks and counters, shall have vinyl composition tile.

10. All other requirements are similar to Kindergarten classrooms.

91.[illegible] Special Education [illegible]

All requirements shall be the same as Section 91.[illegible] with the [illegible] exception [illegible] floors [illegible]

91.46.04 Learning Resource Center

All requirements shall be the same as Section 91.3 with the exception that floors shall be carpeted.

91.46.05 Gymnasium

All requirements shall be the same as Section 91.4 with the following exceptions. A toilet for each sex shall be located adjacent to and directly accessible from the gymnasium. Provide additional electrical outlets for audiovisual equipment. No scoreboard will be necessary in the gymnasium. Provide a projection screen which may be attached and detached from gymnasium wall as required. Vinyl composition tile shall be provided on the gymnasium floor.

91.46.06 Art

All requirements shall be the same as Section 91.5 with the following exception. All furnishings, equipment and window heights shall be designed for a child 48" in height (6 year old).

91.46.07 Music

All requirements shall be the same as Section 91.6 with the following exception. All furnishings, equipment and window heights shall be designed for a child 48" in height (6 year old).

91.46.08 Computer Lab

All requirements shall be the same as Section 91.7 with the following exceptions. The Computer Lab will be used to instruct classes (class size: 25 students plus 1 teacher). Provide one phone line for computer modem hookups with other schools.

91.46.09 Administration Suite

All requirements shall be the same as Section 91.8 with the following exceptions. Provide for two staff in the Secretary/Clerical Area. Provide for a portion of the reception counter to be the correct height for a first grade child (30 in.). This may also be accomplished with a dutch door swinging over in the counter. The majority of the counter shall be the correct height for adults (42 in). Teacher's Workroom shall have tables and counters with storage underneath for teacher's materials. Provide three phone lines, two outside and one dedicated line for computer modem hookups and District's networked computer terminal. Three personal computers and one District networked computer terminal will be located in the Secretary/Clerical Area. The District terminal is personal computer size. Provide a minimum of three grounded double-duplex electrical outlets in the Teacher's Workroom. Provide counterspace for a laminator in the Teacher's Workroom. Provide a minimum of three grounded double-duplex electrical outlets in the lounge. Locate the principal's office to allow for supervision of busses loading and unloading from the office.

[illegible] Guidance Counseling Health Center

All requirements shall be the same as Section [illegible]

[illegible] Cafetorium

All requirements shall be the same as Section [illegible]

[illegible] Maintenance and Operations

All requirements shall be the same as Section [illegible]

[illegible] Circulation Mechanical Electrical

All requirements shall be the same as Section [illegible]

[illegible] Outdoor Recreational Facilities

All requirements shall be the same as Section [illegible]

[illegible] Site Circulation

All requirements shall be the same as Section [illegible]

EVALUATION

SCHOOL IMPROVEMENT PLAN

SOCIALIZATION IN MONTESSORI CLASSES

EVALUATION

RESEARCH

MONTESSORI EVALUATION APPROACH

School improvement is predicated on goal setting and evaluation. Research provides information as to whether the school is achieving its goals. The document included here (as an example of comprehensive evaluation) is unique because it represents Montessori goals articulated in non-Montessori terms. The planning document orchestrates evaluation in the following areas: integrated school environment, academic foundations, parent participation, staff rejuvenation, and community partnerships.

The articles and case studies by Ana Maria Villegas in this section are part of the integrated school improvement data collection at Mitchell Montessori School.

MITCHELL SCHOOL IMPROVEMENT PLAN

EVALUATION

MITCHELL MONTESSORI SCHOOL IMPROVEMENT PLAN

INTRODUCTION

Instrumentation for planning, evaluation, and research in the public sector is critical because it allows the Montessori school to measure its impact on diverse student populations and to speak the language of the district regarding its successes. The combination of planning, evaluation and research allows the Montessori school to provide information to the district, parents and public, while instituting program refinement and excellence through research-informed planning.

Featured in this section is a comprehensive, integrated plan for school improvement which has developed out of a current project sponsored by the Mitchell Montessori School in Denver. Principal, Paula Biwer, and Researcher, Ana Maria Villegas, chose to document a Montessori school from the inception of the school in 1986 with the intention of not only influencing district decisions about the future of the project, but entering the national educational forum with new research data and literature. Ms. Biwer refers to her plan as a road map to the future. The uniqueness of the document and its related study outcomes is its ability to integrate Montessori concepts with public school organizational formats. The result of this work will be a new comprehensive planning and evaluation approach for both the private and public sector.

INTRODUCTION TO THE SCHOOL IMPROVEMENT PLAN

This plan has been prepared by staff, parents and community participants to guide improvement activities at Mitchell Elementary School between now and the end of the 1990 calendar year.

The plan was developed in a participatory process that included needs assessment, goal setting, and implementation planning. The process has heightened our awareness of who we are and how we can best help the students, parents, and public we serve.

October 18, 1988

The Process

An important part of the planning process has been the analysis of needs, the review of school effectiveness literature, school reform and improvement literature, and Montessori philosophy and pedagogy. The School Improvement Planning Committee, the Mitchell faculty, the principal, and an educational researcher met several times to list and discuss needs. Twenty-three needs were identified by the committee with input from staff, parents, and community members.

Needs were identified through the following sources:

- Analysis and evaluation of ITBS scores for 1987-88
- Recommendation of teaching staff
- Recommendations of building School Improvement Accountability Council Committee
- Discussion with Parent Teacher Student Association Board

- Feedback from parent conferences
- Recommendations of Director
- Recommendations of Montessori consultants
- Recommendations of clerical and custodial staff

After the needs were listed, the committee, with the assistance of the researcher, helped prioritize the needs using a process to identify the most important and manageable ones. We were able to include all of the identified needs by organizing them under the five goals of the program. A brief rationale statement introduces each goal and provides the context for our improvement plan.

Mission Statement

The mission of the Mitchell Montessori program is to enable all students to develop strategies for the acquisition of knowledge, skills and values they need to participate meaningfully in our pluralistic society.

Consistent with this mission, the program strives to reach five goals addressing the following areas:

A. Integrated school environment
B. Academic foundation
C. Parent participation
D. Staff rejuvenation
E. Community partnerships

The rationale of the program goals is listed below along with the objectives thereby making the program philosophy more explicit.

A. Integrated School Environment

From a Montessori perspective, the cultural, social, age and individual differences evident in our society are assets that should be cultivated. Accordingly, the best education possible is one in which children from diverse backgrounds are free to interact and learn in an atmosphere that respects their differences. In keeping with this view of society and education, the Mitchell Montessori program is carefully designed to offer students an integrated school environment. The commitment to integration is embodied in the following program goal:

***Goal 1* — To provide parents in the Denver Public Schools with the opportunity to enroll their children in classrooms that are integrated on the basis of ethnicity, social background, age, gender and cognitive differences.**

Objectives

1.1 — The Mitchell Elementary School program will select students in accordance with district policy regarding ethnic integration.

1.2 — Each classroom in the program will mix students by ethnic group, socioeconomic level, age, gender and cognitive ability.

B. Academic Foundation

According to Maria Montessori, no human being is educated by another person. Rather, children learn through their own efforts from their environment. Adults promote the learning process by serving as the dynamic link between the environment and the child. That is, learning is not the mere passing of information from teacher to student; it is the process through which the child develops strategies for the acquisition of knowledge and skills.

EVALUATION

The important task of schools is to provide students with a general foundation that will enable them to acquire more specialized knowledge and skills later in life. Such a foundation is a prerequisite for meaningful participation in a rapidly changing society and world and serves as the best deterrent to the school drop out problem. This concern informs the second goal of the Mitchell Montessori program.

***Goal 2* — To provide a carefully planned and stimulating instructional program to help children develop within themselves a strong academic foundation.**

Objectives

2.1 — Teachers will implement the Montessori curriculum

2.2 — Students will develop the following skills as reported on a teacher pre/post rating scale:
  a. a positive attitude toward school
  b. inner security and sense of order
  c. pride for the physical environment
  d. abiding curiosity
  e. a habit of concentration
  f. habits of initiative and persistence
  g. the ability to make decisions
  h. a sense of independence/self-confidence
  i. self-discipline
  j. a sense of responsibility to other members of the class, school and community

2.3 — Students will develop proficiency in the following basic skills areas and will achieve at or above the district average on the IOWA Test of Basic Skills:
  a. listening
  b. speaking
  c. reading
  d. writing
  e. mathematics
  f. social studies
  g. science
  h. art appreciation
  i. music appreciation

2.4 — Teachers and principal will adopt a written report form to keep elementary school parents informed of students' academic and social progress

2.5 — Staff and parents will develop procedures to identify at-risk students
  a. developmental screening for all preschool students
  b. at-risk profile on each student

2.6 — Staff and parents will provide students who are identified at risk with successful learning experiences and additional personal support

2.7 — Parents and faculty will work together to maintain high student attendance rates

C. Parent Participation

Research shows three major benefits associated with parents' active involvement in the education of their children. First, children tend to attain higher achievement gains when parents participate in school activities. It is thought that through such participation parents gain knowledge and skills to help their children to learn at home. Second, parent involvement in schools generally increases their satisfaction with the instructional programs which leads to greater support of those programs. Last, the presence of parents in the school conveys a message to the children about the importance of formal education.

Parent participation in the teaching-learning process of their children is crucial in Montessori educational programs. Since children are thought to learn from their environment, whether at school or elsewhere, teaching is necessarily a joint responsibility of the school and family. In accordance with the Montessori philosophy, the Mitchell program includes a parental component in which activities are guided by the following goal:

***Goal 3* — To promote and maintain continuity in the learning process between home and school through an active parent education program.**

Objectives

3.1 — Implement a varied series of parent activities including:
  a. orientation session
  b. parent-student open house
  c. classroom observations
  d. parent-teacher conferences
  e. parent education nights on topics of Montessori curricula

3.2 — Sustain high rate of parent participation at Mitchell School events

3.3 — Establish a strong and active Parent-Teacher Organization and School Improvement Accountability Council

D. Staff Rejuvenation

Quality instructional programs must necessarily make ongoing adaptations to meet the evolving needs of a diverse student population. Additionally, maintenance of quality instructional efforts requires collegial support. Given these concerns for the establishment and maintenance of educational excellence, the Mitchell Montessori program has planned staff rejuvenation activities. The goal of the activities is as follows:

***Goal 4* — To provide support to the Mitchell Montessori program staff in order to refine and extend their ability to deliver quality instruction.**

Objectives

4.1 — Montessori principal will observe in classrooms, provide feedback to the teacher and assistants, and support their professional growth.

4.2 — Administration, teachers and assistants will observe other Montessori classrooms in Mitchell as well as other Montessori schools.

4.3 — Staff will attend regional and national Montessori conferences, workshops, and other staff development activities.

4.4 — Staff will attend weekly meetings that will address:
  a. curricular issues
  b. primary and elementary level concerns
  c. program planning issues
  d. program implementation procedures

4.5 — Teachers and assistants will meet periodically to coordinate their instructional efforts.

4.6 — Parents will recognize staff excellence through appreciation activities.

E. Community Partnerships

The school is the institution that provides members of our society with a formal education. Recently, however, we have come to the realization that schools alone cannot ensure that children will reach their

EVALUATION

greatest potential. For the most effective education possible, schools need to develop partnerships with other agencies and organizations at the local, state and national levels. This realization has led to the fifth goal for the Mitchell Montessori program:

***Goal 5* — To develop meaningful partnerships with local, state and national agencies and organizations for the purpose of strengthening the Mitchell Montessori program.**

Objectives

5.1 — Promote the involvement of community resources at Mitchell School.

5.2 — Inform the community about the Montessori program at Mitchell and promote positive perception and interaction.

5.3 — Form partnerships with business agencies within Denver.

5.4 — Nurture district-wide understanding and respect for the program.

5.5 — Program administrators and faculty will serve in leadership roles in local, state and national educational efforts.

ACTION PLAN

Goal	Objectives	Source of Data							Data Collection Responsibilities			
		Descriptive Narrative	Profile / Form	Interview Teacher	Interview Administrator	Classroom Observation	Teacher Rating / Forms	Test Iowa	Principal	Faculty	Researcher	Parents / Community
Integration	Ethnic integration schoolwide (1.1)	X	X						X			
	Integrated classrooms (1.2)	X	X						X			
Academic Foundation	Teacher implement Montessori curriculum (2.1)				X				X		X	
	Student outcome — non-academic (2.2)				X	X	X			X	X	
	Student outcome — academic — Iowa (2.3)							X	X	X		
	Student outcome — academic — report form (2.4)	X					X					
	Staff and Parents develop identification procedures for students at risk (2.5)		X						X	X	X	X
	Staff and Parents develop additional support for identified students (2.6)	X		X					X	X		X
	High attendance rates (2.7)						X			X		
Parent Participation	Implement a variety of parent activities (3.1)	X							X	X		X
	Sustain high levels of parent participation (3.2)								X	X		X
	Parent-teacher organization SIAC (3.3)	minutes with events/dates	members						X			
Staff Rejuvenation	Provide supervisory support (4.1)		X	X					X			
	Observe other Montessori programs (4.2)		X	X					X	X		
	Attend regional/national conferences (4.3)		X	X					X	X		
	Attend weekly meetings (4.4)		X	X					X			
	Coordination between teacher and assistant (4.5)		X	X					X	X		
	Parent recognition of staff excellence (4.6)	X										X
Community Partnerships	Involve community resources (5.1)		X						X			
	Inform community about program (5.2)		X						X			
	Partnerships with business (5.3)		X						X			
	Nurture districtwide respect for program (5.4)		X						X			
	Administration/faculty will serve leadership role — local, state, national Montessori community (5.5)		X						X	X		

EVALUATION

DATA GATHERING FORMS

The following forms were utilized in establishing accountability and a measure of goal realization. Outcomes are published in the chart formats which make the information easily accessible to the faculty, administration, and district officials.

GOAL 1 – INTEGRATION

STUDENT DISTRIBUTION BY AGE, ETHNICITY AND GENDER FORM*
(By Classroom)

AGES AS OF SEPTEMBER	ETHNIC GROUP					
	NATIVE AMERICAN	BLACK	ASIAN	HISPANIC	ANGLO / OTHER	TOTALS
3 year olds						
4 year olds						
5 year olds						
6 year olds						
7 year olds						
8 year olds						
9 year olds						
Totals						

Key: Girls are at the bottom right triangle ⧄

Boys are at the top left triangle ⧄

Class # ____________________

*This form is used to compare classroom populations. The precision of this instrument allows for maximum fine tuning in constructing class composition.

EVALUATION

MONTESSORI ASSESSMENT MEASURES

Montessorians in the public sector need to develop assessment measures that reflect the very special nature of Montessori education and its impact on the emerging personality. Through a review of Montessori literature, discussion with parents, staff, and researcher, the following ten qualities were identified as critical indicators of a student's healthy and normal development in a Montessori classroom. We believe that these personal, social, and emotional attributes are the basis for foundation skills for all learning and should be respected as a legitimate measure of program success.

GOAL 2 — ACADEMIC FOUNDATION

ATTITUDES TOWARD SCHOOL FORM*

STUDENT NAME	Positive Attitude Toward School	Inner Security / Sense of Order	Pride in Physical Environment	Curiosity	Habit of Concentration	Initiative / Persistence	Ability to Decide	Sense of Independence / Self-Confidence	Self-Discipline	Sense of Responsibility To Others

*Teachers are asked to rate each student in their class in terms of development of basic attitudes toward school and learning using a scale of 1-5 (1 = lowest level of development and 5 = highest level of development. See Attributes of the Learner, next page, for sample indicators).

EVALUATION

In discussion of this new assessment tool, the Montessori staff and researcher believed that all evaluators needed a common basis on which to rate students. The researcher, principal, and a teacher met to create a list of sample behaviors, "Attributes of the Learner," that were understandable to the raters. This working-through process helped to bring meaning and a measure of reliability to pre- and post-ratings. Pre-ratings were done within the first six weeks of the beginning of the academic school year and post-ratings were done within the last three weeks of school. The analysis of findings from this assessment is being compiled.

ATTRIBUTES OF THE LEARNER

Attribute	Rating	Sample Indicators
Positive Attitude toward school	(1)	Signs of fear and panic at separation from parent/guardian; anxious behavior; hysterical behavior
	(3)	Shows signs of fear of separation, but displays confidence in overcoming fear of separation
	(5)	Signs that child looks forward to going to school; strong desire to be in school; talks to parents about what occurred in school
Inner Security/sense of order	(1)	Someone who constantly needs physical and/or verbal reassurance from adult; blind to the environment; work done carelessly and incompletely
	(3)	Completes work that has been presented; handles materials properly
	(5)	Child goes readily to work; spontaneously cares for the work and the environment; high evidence of organization in work
Pride in Physical environment	(1)	Carelessness; not returning materials to proper place; taking more than his/her share; not cleaning up
	(3)	Completing work and maintaining good order
	(5)	Care and love of the environment; selfless ownership of the environment; contribute to environment (e.g., bringing objects from home)
Curiosity	(1)	Passive disinterest; fear to try; oblivious; out of touch; low-level reaction to stimulus of materials
	(3)	Choosing to use materials; being involved to the point of interest with the materials
	(5)	Raising questions; deep search; sense of wonder
Habit of concentration	(1)	Easily distracted; hyperactivity; interrupts others
	(3)	Concentrated work without being totally absorbed; controlled work; focused work; centers on work
	(5)	Total absorption in activity, leading to contemplation in older child; satisfaction
Initiative/persistence	(1)	Child is dependent on adult or other children, scattered attention; flighty
	(3)	Follows through with work; completing work satisfactorily
	(5)	Self-directed; wide range of interest; displays an inner motivation; thoroughness in perfecting tasks
Ability to make decisions	(1)	Child cannot make choices; becomes inactive because he/she cannot make decisions; fear of failure
	(3)	Making appropriate choices without needing adult direction
	(5)	Self-assured; risk-taking; disinterested judgement (making decisions based on perception of what is right)
Self-confidence/sense of independence	(1)	Timidity; uninvolvement; dependency on others
	(3)	Child displays happiness, interestedness, involvement; can work alone
	(5)	Expressiveness; courage; takes on challenges; sets out on his/her own; adventurous
Self-discipline	(1)	Child misbehaves; disruptive behavior
	(3)	Keeping up with work; working on his/her own; getting along with peers
	(5)	In control of self in different settings; highly focused; in harmony with the group
Sense of responsibility to others	(1)	Hostility; ego-centric; selfishness; aggression toward others
	(3)	Performs classroom jobs; shares with others
	(5)	Charismatic leadership; commitment to good works, commitment to social causes

EVALUATION

GOAL 3 – PARENT PARTICIPATION

ACTIVITIES INVOLVEMENT FORM*
1989-90

Child's Name ______________________________ Room ____________

Activity	Mother	Father	Guardian / Grandparents	Date
Get Acquainted Picnic				
Parent-Child Open House				
Parent Education Meetings 1. ____________				
2. ____________				
3. ____________				
4. ____________				
Grandparents' Day				
Guided Student Observation 1st Semester ______				
2nd Semester ______				
Parent-Teacher Conference 1st Semester ______				
2nd Semester ______				
Cinco de Mayo				
Voluntary Activities				

---

*Each class' master sheet is compiled from these forms which remain in each student's file. This information enables the teachers to promote greater participation, if necessary.

EVALUATION

GOAL 4 – STAFF REJUVENATION

STAFF DEVELOPMENT PARTICIPATION FORM

NAME: ____________________

DATE: __________ EVENT: ____________________ TIME: __________

GOAL 4 – STAFF REJUVENATION*

This form is useful to assist the recordkeeping task required by the Denver Public Schools. Each principal should observe each teacher three times per semester and document feedback and topic discussed.

SUPERVISORY SUPPORT SUMMARY FORM

TEACHER	CONFERENCE DATE	TOPIC	OBSERVATION DATE	TIME
	1.			
	2.			
	3.			
	4.			
	5.			
	6.			
	1.			
	2.			
	3.			
	4.			
	5.			
	6.			
	1.			
	2.			
	3.			
	4.			
	5.			
	6.			

---

*Each box contains one teacher's name per box in alphabetical order. Keep the pages on a clipboard where it is always handy to record supervisory activity. It provides a journal of sorts to refer to when conferring with staff.

EVALUATION

GOAL 4 – STAFF REJUVENATION

OBSERVATION FORMS

Faculty Member: ______________________

1. Observation of other Montessori Classrooms in Mitchell program, or other Montessori programs.

Mitchell	Other	Date	Comment

2. Attendance at Regional / National Conferences.

Conference	Regional / National	Comment

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

NURTURE DISTRICTWIDE RESPECT FOR PROGRAM FORM

Activity	Date

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

INFORMATION TO COMMUNITY ABOUT PROGRAM FORM

Type of Information	Recipient of Information	Date	Means of Dissemination

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

PARTNERSHIPS WITH BUSINESS FORM

Business	Type of Partnership	Date(s)

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

INVOLVEMENT OF COMMUNITY RESOURCES FORM

Agency	Date	Type of Involvement

*This form and the one on the next page are designed to keep the recording task simple and well organized.

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

ADMINISTRATION / FACULTY LEADERSHIP ROLE
LOCAL, STATE, NATIONAL MONTESSORI COMMUNITY FORM

Adm. / Fac.	Local / State / National	Describe Role

EVALUATION

CHARTS GENERATED BY DATA GATHERING FORMS

Data collection can provide clearly reported information for annual reports by utilizing a chart medium which school districts can readily understand.

GOAL 1 – INTEGRATION

STUDENT ENROLLMENT AT MITCHELL SCHOOL BY ETHNIC MEMBERSHIP
SEPTEMBER, 1988

AGE GROUP	ETHNIC MEMBERSHIP				
	Native American	Black	Asian	Hispanic	Anglo/Other
3 Year Olds	2	17	3	16	27
4 Year Olds	1	14	4	13	27
5 Year Olds	1	18	2	17	27
6 Year Olds	—	9	3	13	38
7 Year Olds	—	7	1	16	28
Grand Total	4	65	13	75	147
Percentage	1%	22%	4%	25%	48%

PROJECTED STUDENT ENROLLMENT FOR FALL '89 AT MITCHELL SCHOOL
BY ETHNIC MEMBERSHIP
APRIL, 1989

AGE GROUP	ETHNIC MEMBERSHIP				
	Native American	Black	Asian	Hispanic	Anglo/Other
3 Year Olds	—	15	2	15	26
4 Year Olds	2	17	4	16	27
5 Year Olds	1	14	4	13	27
6 Year Olds	1	18	2	17	27
7 Year Olds	—	11	3	15	41
8 Year Olds	—	7	1	16	29
Grand Total	4	82	16	92	177
Percentage	1%	22%	4%	25%	48%

EVALUATION

IOWA TESTS

This year it was mandatory to give the IOWA tests the day after a change to daylight savings time. Students, families, and teachers were disoriented and the entire district's scores dropped drastically from the previous year. We also realized that six out of eleven teachers had never administered an IOWA before or the level was new to them. Finally, as our program grows, we service an increasingly Hispanic and Asian population whose mother tongue is not English who tend to score between 0-20% on the IOWA. Through a more detailed analysis of the pounds of IOWA computer printouts, the researcher was able to highlight to the staff and ultimately to the parents the areas of greatest measured academic performance, the areas that needed improvement, and measured out that we had still accomplished our goal of having students score at or above the Denver Public School average.

Based on this very thorough analysis, our staff has decided to focus next year on strategies that will better prepare and enhance our students' ability to respond to the test-taking situation and the actual test with greater ease and preparation.

GOAL 2 – ACADEMIC FOUNDATION

IOWA TESTS OF BASIC SKILLS: COMPOSITE SCORES FOR MITCHELL AND DPS
By Grade Level (Spring 1989)

Grade	Mitchell %ile	DPS %ile
Kindergarten	64	47
First	57	52
Second	52	52

GOAL 2 – ACADEMIC FOUNDATION

TOTAL LANGUAGE/TOTAL MATH COMPOSITE
IOWA SCORES

Years	Grade		
	K	1	2
1986	14	24	27
1987	36	42	31
1988	77	75	31
1989	64	57	56

AVERAGE DAILY ATTENDANCE
(In Percents)

Years	Attendance
1986-87	95.4
1987-88	90.2
1988-89	95.0

EVALUATION

GOAL 3 – PARENT PARTICIPATION

PARENT ACTIVITIES*

DATE	ACTIVITY	ATTENDANCE
08-27-88	Get Acquainted Picnic	500 +
09-22-88 & 10-06-88	Parent-Child Open Houses	500 +
1st Semester	Parent Observation of Student's Classroom	447
1st Semester	Parent-Teacher Conferences	341
10-20-88	Parent Education "Parenting Issues"	115
11-04-88	Grandparents' Day at Mitchell	79
11-28-88	Fall general PTSA meeting	118
12-03-88	Transportation Appreciation Breakfast	100 +
01-12-89	Parent Education "The Special Child in Each of Us"	48
02-16-89	Parent Education "Montessori as an Aid to Life"	44
02-26-89	Parent Education "The Psychological Development of the Child in the First Three Years of Life and its Impact on Personality"	100 +
03-06-89	Elementary Parent Education – Montessori curriculum	42
03-13-89	Primary Parent Education – Montessori curriculum	65
03-13-89– 03-17-89	International Studies Week	450 +
04-26-89	Parent Education "How to Make Home Experiences Learning Experiences"	75
2nd Semester	Parent-Teacher Conferences	325
05-03-89	New Parent Orientation Meeting	62
05-05-89	Cinco de Mayo Celebration	609
05-16-89	1st Annual Student's Science Fair	435
05-16-89	Spring General PTSA Meeting	85
05-23-89 & 05-25-89	Spring Suzuki Violin Concerts	700 +
05-26-89	"New Cooperative Games" Field Day	465

*1988-1989 Total enrollment is 300 students.

EVALUATION

GOAL 3 — PARENT PARTICIPATION

PROPORTION OF STUDENTS REPRESENTED AT OPTIONAL PARENT EDUCATION ACTIVITIES BY ETHNIC GROUP (SCHOOL YEAR 1988-89)

Activity	Ethnic Group					Total (n = 304)
	Nat. Am. (n = 4)	Black (n = 65)	Asian (n = 13)	Hispanic (n = 75)	Anglo/Other (n = 147)	
Parenting Issues	.50	.26	.15	.21	.28	.26
The Special Child in Each of Us	.25	.02	.23	.08	.19	.13
Montessori as an Aid to Life	.00	.09	.31	.08	.14	.12
School Information Night	.25	.14	.15	.09	.31	.21

PROPORTION OF STUDENTS REPRESENTED AT MAJOR PARENT EDUCATION ACTIVITIES BY ETHNIC GROUP (SCHOOL YEAR 1988-89)

Activity	Ethnic Group					Total (n = 304)
	Nat. Am. (n = 4)	Black (n = 65)	Asian (n = 13)	Hispanic (n = 75)	Anglo/Other (n = 147)	
Parent-Student Open House	.50	.55	.62	.51	.84	.68
Classroom Observations	1.00	.71	.62	.63	.94	.80
Parent-Teacher Conf. — Fall '88	.75	.85	1.00	.76	1.00	.89
Parent-Teacher Conf. — Spring '89	.75	.78	.85	.81	.95	.88
Get Acquainted Picnic	.50	.20	.38	.07	.55	.35
Cinco de Mayo	.50	.54	.23	.61	.69	.72

*This form gives figures on proportional representation at events by ethnic group and enables us to target areas for future improvement. Encouraging target group participation in the planning process leads to more meaningful and better outcomes.

Elementary education requires a less formal reporting on parent involvement: date, event, number of participants. Mitchell used total school data to report the required information.

EVALUATION

GOAL 3 – PARENT PARTICIPATION

MASTER SHEET

Ethnic Code	Student	PTA Member Parent Volunteer	Get Acquainted Picnic (8/27/88)	Open House (9/22 or 10/6/88)	1st Sem. Observation	1st Sem. Conference	Parent Ed Night (10/20/88) "Parenting Issues"	Grandparents' Day	1st Sem. PTA Meeting (11/28/88)	Parent Ed Night (1/12/89) "The Special Child in Each of Us"	Parent Ed Night (2/16/89) "Montessori Education as an Aid to Life"	2nd Semester Observation	2nd Semester Conference	2nd Semester Parent Ed Nights Montessori Hands-on ???	Cinco de Mayo	2nd Semester PTSA Meeting 5-16-89
5	Julian	╲	╲•	╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲•	╲
2	Anthony	╲	╲	╲	╲	╲•	╲	╲	╲	╲	╲	╲	•╲	╲	╲•	╲
2	Janell	╲	╲	╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
5	Lisa	╲•	•╲•	•╲•	╲•	╲•	╲•	╲	╲	╲	╲•	╲	╲•	╲	╲•	╲•
5	Molly	╲	╲	╲	•╲•	╲•	╲	╲	•╲•	╲	╲	╲	╲•	╲	╲•	╲
5	Jackson	╲	╲	╲	╲•	╲•	╲	╲	╲•	╲	╲	╲	•╲•	╲	╲•	╲•
2	Lezley	╲	╲	•╲	╲	╲•	╲•	╲	╲	╲	╲	╲	╲•	╲	╲	╲
2	Nicole	╲	╲•	•╲•	╲•	╲•	•╲•	•╲•	•╲•	╲	╲	╲	•╲•	╲	╲•	•╲•
4	Angelica	╲	╲	╲•	╲	╲	╲	╲	╲	╲	╲	╲	╲•	╲•	╲•	╲
5	Nicole	╲	╲	╲•	╲	╲	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
2	Patrick	╲	╲	•╲•	╲	╲•	╲	╲	╲	╲	╲	╲	•╲•	╲	╲•	╲
5	Juliet	╲	╲	╲	╲•	╲•	╲	╲•	╲	╲	╲	╲	╲•	╲	╲•	╲
5	Tessa	╲	•╲•	•╲•	╲•	•╲	╲	╲	╲•	╲	╲	╲	╲•	╲	╲•	•╲
5	Sara	╲	╲•	╲•	╲•	•╲•	╲	╲	╲•	╲	╲	╲•	•╲•	╲	•╲•	╲
2	Mathurin	╲	╲	╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
2	Jarrad	╲	╲	╲•	╲•	╲•	╲	╲•	╲	╲	╲	╲	╲•	╲	╲	╲
5	Adam	╲	╲	•╲•	•╲•	•╲•	╲	╲•	•╲	╲	╲	╲	╲•	•╲•	╲	╲
5	Casey	╲	╲	╲•	╲•	╲•	╲	•╲•	╲	╲	╲	╲	╲	╲	╲	╲
4	Eduardo	╲	╲	╲	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
2	Gary	╲	╲	╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲•	╲•
3	Lynda	╲	╲	╲	╲	•╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
5	Timothy	╲	•╲•	•╲•	•╲•	•╲•	╲	╲•	•╲•	•╲•	•╲•	╲	•╲•	╲	•╲•	•╲•
4	Indina	╲	╲	╲	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲	╲
5	Rochelle	╲	•╲	•╲•	╲•	╲•	╲•	╲	╲	╲	╲•	╲	•╲•	╲	╲•	╲
4	Christina	╲	╲	•╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲•	╲	╲•	╲
2	Robin	╲	•╲•	•╲•	•╲•	•╲•	╲•	╲	╲•	╲	•╲•	╲	•╲•	╲	╲•	╲
4	Desiree	╲	╲•	•╲•	╲•	╲•	╲•	•╲•	•╲	╲	╲	╲	╲	╲	╲	•╲
3	Holly	╲	╲•	╲	•╲•	•╲•	•╲•	╲	•╲•	╲	╲•	╲	•╲•	•╲•	╲•	•╲•
5	Robert	╲	╲	╲•	╲•	╲•	╲	╲	╲	╲	╲	╲	╲	•╲	╲•	╲
5	Ariana	╲	╲	•╲•	╲•	•╲•	╲	╲	•╲•	╲	╲	╲	•╲•	╲	╲	╲
2	Bagi	╲	╲	╲	╲•	╲•	╲	╲	╲	╲	╲	╲	╲	╲	╲	╲

Key: 1 = Native American 2 = Black 3 = Asian 4 = Hispanic 5 = Anglo/other

• right top = mother • left bottom = father / = relative, guardian, friend

*From these completed forms from each class total school information can be compiled. This collection process is time consuming, but ultimately it provides the most precise and useful data which can be formatted in a number of different ways for different audiences.

EVALUATION

GOAL 4 — STAFF REJUVENATION

IMPROVED TEACHING METHODS
PLANNING, INSERVICE AND CONFERENCE ACTIVITIES

Date	Activity
08-20-88	Entire Faculty (teachers & paraprofessionals) social & school planning retreat
09-14-88	Dr. Ana Maria Villegas presents status of Montessori research to faculty
10-06-88	Computer in-service begins for elementary staff
10-20-88	Begins a series of lectures by nationally prominent Montessorians (Judi Bodi, Sanford Jones, Dr. Silvano Montanaro)
11-17-88	In-service on cooperative games
01-09-89– 01-13-89	Intensive week of afternoon Montessori training for paraprofessionals and support staff
02-08-89	In-service on classroom discipline strategies
02-18-89	Music & Movement day-long workshop
03-02-89	DPS Aids Curriculum Instruction In-service
03-07-89	Elementary teachers planning meeting for 1st Science Fair
04-04-89	Staff & parent meeting for planning Cinco de Mayo
05-13-89	P.E. — staff planning for New Cooperative games on Field Day
05-31-89	Dr. Ana Maria Villegas — Faculty in-service on IOWA results

A SAMPLE OF ADDITIONAL STAFF DEVELOPMENT ACTIVITIES PURSUED BY INDIVIDUAL OR GROUP STAFF MEMBERS

ABC Conference — Special Education
Art Appreciation
Autoharp lessons
Colorado Educational Media Association annual conference
Conflict management
Creative writing
Elementary Montessori Review Course — Cleveland State University
Grant Writing DPS in-service
Manipulative mathematics
Minority Students — three-five years olds — CEC sponsored
Montessori — Association Montessori Internationale Study Conference
Montessori — North American Montessori Teachers' Association — Montessori in the Public Schools conference
Orff music workshop
Project Wild
Self-esteem workshops
Spanish as a Second Language in-services
University of Colorado Storyteller's Conference
Vision Therapy Conference
Whole Language: Reading and Writing

EVALUATION

GOAL 5 – COMMUNITY PARTNERSHIPS

Community Relations

RECOGNITION

Black Education Advisory Council – Certificate of Merit for Academic Achievement (Spring 1989).

Denver Public Schools – Science proposal selected for Chapter 2 funding (Spring 1989).

Denver Public Schools Public Relations Department – Acknowledgement of the Montessori early childhood program as featured in Mill Levy promotional video (Fall 1989).

Mayor's Office – Education Project for school year 1989-90 (Spring 1989).

Neighborhood Housing Services in Cole – Acknowledgement of Mitchell School's impact on neighborhood revitalization – presentation of 100 flower bulbs and three trees (Fall 1988).

North American Montessori Teachers' Association – Acknowledgement of Mitchell Montessori's program contribution to Montessori in the public schools – filmed program as part of national documentary (Spring 1989).

Public Education Coalition – Selected to participate in the League of Pilot Schools Literacy Project (Spring 1989).

PRESENTATIONS

8-1-88 – **Association Montessori Internationale** – presentation "Montessori in the Public Schools"

1-10-89 – **University of Colorado at Denver** – presented the Montessori philosophy and curriculum to graduate classes

2-17-89 – **Colorado Partnership for Educational Renewal** – presentation "Alternatives to Standardized Testing – Student Portfolios"

2-23-89 – **University of Denver** – presented the Montessori philosophy and curriculum to graduate classes

4-5-89 – **Colorado Forum** – Mitchell Team (principal, IMC specialist and three parents) do a slide presentation and panel discussion about Montessori education.

4-28-89 – **North American Montessori Teachers' Association** – presentation "The Importance of Research in Montessori Schools"

5-30-89 – **Denver Department of Social Services** – presentation to Family Opportunity Program case workers: "Parent Empowerment/Participation"

7-26-89 – **Colorado Department of Education** – Mitchell team presentation at "Strategic Options Initiative"

SUZUKI VIOLIN PERFORMANCE SCHEDULE

Date	Place
9/22/88	Mitchell – Back to school night
10/1/88	West Pines Psychiatric Hospital
11/4/88	Mitchell – Grandparents Day
11/21/88	Steck Elementary
12/1/88	United Airlines
12/2/88	Hope Center
12/14/88	United Airlines
12/15/88	Colorado National Bank
12/16/88	Mitchell – bus driver breakfast
1/24/89	Mitchell – Channel 9 filmed here for "Positive Colorado"
3/17/89	Mitchell – International Week
4/18/89	Heritage Club
4/30/89	Citywide Honor Concert – South High School
5/8/89	Laradon Hall
5/12/89	Godsman Elementary
5/17/89	St. Martin Plaza – Senior Citizen Home
5/22/89	Gilpin Elementary
5/23/89	Mitchell – Primary spring concert
5/25/89	Mitchell – Elementary spring concert
5/31/89	Mitchell – North East Childcare Center

EVALUATION

INSTITUTIONS OF HIGHER LEARNING

Metropolitan State College — participated in the Youth/Early Childhood Development Project.
Colorado State University — participated in the cooperative extension vegetable gardening project.
University of Colorado at Denver — participated in a three-year research/evaluation project.

CHARITY SUPPORT

March of Dimes "Walk-A-Thon" with United Airlines
National Multiple Sclerosis Society "Read-A-Thon"

COMMUNITY/BUSINESS PARTNERS

Close relationship with United Airlines
Friendship with the Colorado Forum

INTERESTED FOUNDATIONS AND AGENCIES

Center for the New West
Family Star
Piton Foundation
Public Education Coalition
United Way

MARIA MITCHELL ELEMENTARY SCHOOL MONTESSORI PROGRAM BOARD OF EDUCATION

Edward J. Garner, President

Dorothy A. Gotlieb, Vice-President

Sharon Bailey

Naomi L. Bradford

Marcia Johnson

Thomas Mauro

Carole H. McCotter

RICHARD P. KOEPPE

SUPERINTENDENT OF SCHOOLS

Paula Biwer, Principal

EVALUATION

THE SOCIALIZATION OF CHILDREN IN A MONTESSORI CLASSROOM

by Ana Maria Villegas, Ph.D.

- ***To be successful in the classroom, students need to be socially as well as academically competent.***
- ***In addition to the correct answer to the teacher's questions, students need to recognize and understand different directives, informatives and elicitations.***
- ***Traditional classrooms develop a hierarchical order in which "low groups" are more tightly controlled than "high groups."***
- ***In a Montessori classroom the roles of teacher and student are less marked than in typical public schools.***
- ***In a Montessori classroom students are not grouped by ability. Because they do not compete for grades they are open to cooperation with their peers and helping others learn and grow.***
- ***Montessori children make individual choices with an understanding of situational constraints tempered by a sense of social responsibility.***
- ***Montessori develops productive future citizens. The public school system has much to learn from the classroom socialization used in the Montessori system.***
- ***Case studies bear out the effectiveness of the Montessori system. (Two examples are included.)***

Educational success and failure is a topic of major concern to teachers, parents, and the public at large. No doubt this interest stems from the documented fact that educational attainment in the United States is a fairly accurate predictor of an individual's future (Blau & Duncan, 1967). How well a student performs in school has profound implications for his or her adult life.

Traditionally, educational success has been measured in terms of academic knowledge and skills. Students considered academically successful are those who have learned the factual content of the curriculum, mastered the basic skills of decoding and computing, and developed higher-order thinking skills. Generally, schools measure academic competence with standardized achievement tests.

Recently, an emerging line of inquiry has produced convincing evidence that educational success involves more than academic knowledge and skills (see Hymes, 1972; Gumperz, 1981; Mehan, 1979). To be successful, students also need to know with whom, when, and where they can speak and interact in class. Said differently, pupils must be socially competent in the ways of the classroom to gain access to instruction and to display their knowledge. However, this social dimension of learning is generally ignored by educators.

To understand the broad implications of educational success and failure, one must examine schooling in relation to society. One of the functions of school is to prepare children for adulthood. Undoubtedly the society of the future will need individuals with a solid academic background. To this end, our country invests heavily in curriculum and materials development, teacher education, student program development, and educational research. However, of equal importance are social skills and attitudes that enable one to live in a

---

Dr. Ana Maria Villegas was Assistant Professor at the University of Colorado at Denver where she taught courses in multicultural education, linguistic and cultural issues in testing, and communicative competence in the classroom. Currently, she is a research scientist at Educational Testing Service in Princeton, New Jersey.

diverse and complex society. Unfortunately, our investment in this important social dimension of schooling is minimal. The failure to recognize the significance of classroom socialization is certain to have serious repercussions.

While attention is given to the academic dimension of school life, this chapter also emphasizes the often neglected socialization process that occurs in classrooms. Specifically, it reports the findings of a study of the socialization of children in a multi-ethnic Montessori primary class. The purpose of the study was twofold – to describe what the students needed to do to be considered competent members of their class; and to illustrate how qualitative research can be used in planning for the future.

REVIEW OF THE LITERATURE

Our understanding of the social dimension of academic success and failure owes much to qualitative research methodologies. During the past 15 years, classroom studies have appeared under the rubrics of context analysis (McDermott, 1976), micro-ethnography (Erickson & Shultz, 1981), constitutive ethnography (Mehan, 1978), and conversational analysis (Gumperz, 1977). Each of these qualitative research approaches treats classrooms as social systems or communities organized into different instructional events by teacher and pupils. Examples of events that routinely occur in public school classrooms are "reading time," "mathematics group," and "science lesson."

Micro-ethnographic studies, the broader term for this line of research, describe the interactional work of teacher and students that constitutes instructional events. The studies reveal that the actions of participants do not occur randomly. Rather, the ways of talking and acting in the classroom are governed by rules of appropriateness. The function of the rules is to regulate the actions of the participants, thereby facilitating an orderly exchange. To the extent that learning is a function of the pupil's ability to engage in and sustain interaction, competence in interpreting and using the rules of different learning situations determines educational success.

Micro-ethnography has broadened our understanding of educational success by showing that students must learn not only to do well academically, but also to act in ways that are appropriate to the academic environment. Additionally, this line of investigation provides insight into the socialization process by describing in detail the social skills students must have to succeed in a variety of classroom situations or events.

While the micro-ethnographic approach to studying classrooms is relatively recent, the literature includes a number of studies describing the interactional work of teacher and students during specific events. Among the events analyzed are the reading lesson (Au, 1980); the procedural meeting (Bremme, 1976); the mathematics lesson (Florio & Shultz, 1979); the teacher-directed lesson (Griffin & Humphrey, 1978; Mehan, 1979; Villegas, 1986); the reading group session (McDermott, 1976); game playing time (Shultz, 1976); preparation for reading (Van Ness, 1977); and circle time (Florio, 1978). No study of this nature, however, has been conducted in a Montessori classroom.

TEACHER-DIRECTED LESSONS – TRADITIONAL CLASSROOMS

Villegas' (1986) study of teacher-directed lessons will be used to illustrate the ethnographic tradition. The study was selected because teacher-directed lessons occur frequently in public schools today. The findings provide insight into the type of socialization students generally experience throughout their school career.

Villegas collected and analyzed videotaped data of teacher-directed lessons with high and low reading groups in a second grade classroom. She found that the lessons conformed to the structural model reported previously by Mehan (1979). Specifically, the lessons were organized into opening, instructional and closing phases, with the opening and closing phases consisting of directives and informatives. Directives from the teacher required action from the pupils that supported the academic exchange. For example the utterance, "open your book to page 59," was a request for action. The act was completed interactionally when the pupils complied with the teacher's request. Informatives from the instructor provided pupils with information. They in turn were expected to attend to the teacher's utterances and acknowledge their content. The major portion of the lesson, however, was the instructional phase, which was developed primarily through the teacher's use of successive elicitation sequences. Each elicitation conveyed academic information among the participants, and consisted of a question from the teacher, a reply from a student, and an evaluation from the teacher.

To be successful in these lessons, students had to satisfy the teacher's criteria for academic accuracy. Additionally, pupils needed to recognize the different interactional demands placed upon them by the teacher's directive (carrying out her requests for action); informatives (attending to her as she provided information); and elicitations (responding to the topic initiated by the instructor; and knowing how to gain turns at talk and what to do once the floor was given). Furthermore, if students wanted to interject their own topics during these lessons, they needed to time their statements to occur precisely between the end of one interactional sequence and the beginning of another. Students who lacked the skills to interact during the lessons were virtually blocked out of the academic exchange and lost opportunities to display their knowledge to the teacher and fellow classmates. In brief, this study shows that lessons involve much more than knowledge of the correct answer to the teacher's questions.

While the structural organization of the lessons was the same for all groups, Villegas found important differences in the teacher's treatment of high and low achievers. Specifically, the teacher paced instruction more slowly for the less advanced pupils and exerted even tighter control over their actions.

In brief, the students in this class were being socialized to submit to the teacher's authority. This was evident from the instructor's tight control over the pupils' actions, which accorded them little or no responsibility for their own learning. The teacher had full command of the pacing and content of the lessons. Additionally, she controlled turns at talk and determined which answers qualified as correct. Moreover, by dividing the class into high and low "ability" groups, the pupils were being socialized into accepting a hierarchical order in which the actions of members of the "low group" were even more tightly controlled than those of the "high group." Over time this type of socialization is likely to develop the attitudes that authority is not to be questioned and social hierarchies are natural and unproblematic. These attitudes seem to contradict the basic tenets of a democratic social system, the survival of which depends on thoughtful and questioning individuals.

THE STUDY

The study reported herein is a micro-ethnography of a class of three- to five-year-olds attending a Montessori public school in an urban district. Montessori education is generally associated with the private sector; however, this approach has been used increasingly in public schools since the early 1970s to promote ethnic integration. Williams (1987) estimated that there were approximately 50 Montessori programs in the public schools throughout this country. Just one year later, Kahn, Boehnlein and Villegas (1988) reported over 90 such programs. These data suggest that the use of the Montessori approach is expanding rapidly in inner-city public schools, a phenomenon which makes the Montessori classroom of special interest to urban educators.

The Classroom

There are 31 students in the classroom examined in this study. Of these, 13 were Anglo-Americans, 5 were African-Americans, and 13 were Hispanics. The ethnic distribution conformed to the desegregation policy of the district, the goal of which is to have a near equal number of majority and minority students in every school and whenever possible in every classroom.

Bertha, a pseudonym for the classroom teacher, had five years of teaching experience using a Montessori approach. She was assisted in the classroom by Maximilia (a pseudonym), a woman of Mexican descent with ties to the local Hispanic community.

EVALUATION

The classroom was on the ground floor of the school building. Upon entering the room, one encountered a lively environment, decorated with attractive colors and equipped with inviting materials. The child-sized chairs, tables, stools, and shelves made the room comfortable for the pupils.

Bertha had organized the room into five general areas — practical life, sensorial, language, mathematics, and culture. The practical life section included a variety of materials intended to involve the children in the physical care of the environment. Among the activities were: putting lids on jars, pouring water from one jar to another, transferring grain from one bowl to another, using tongs, polishing bowls, vacuuming and mopping the floor, and scrubbing tables. Breakable materials were used to teach the children to handle them with care and to convey the message that they were trusted in this classroom.

The sensorial area contained materials designed to lay the foundation for complex mathematical and language concepts. These included rods, cylinders, color tablets, bells, and sandpaper letters.

The language, mathematics, and cultural areas contained materials intended to develop academic knowledge and skills on the part of students. These included sandpaper letters and numbers, letter and number cards, metal inserts used to trace geometric shapes, a variety of card sets used for learning initial and ending sounds, and a library amply stocked with children's books, puzzles, maps, and globes.

In brief, the child-sized furniture and the beautifully designed and carefully arranged materials conveyed the message that this environment was created for children.

Methodology

Observational data were collected from August through December of 1988 by two trained observers. The class, which met every weekday morning (from 9:00 a.m. to 12:00 noon), was observed on 35 days for the entire half-day session. The data were collected in two phases. During the initial phase, which ended in mid-September, the observations were broad in focus. Notes taken at the time provided a general account of the sequence of events in a typical day. When the notes or descriptive protocols were analyzed for patterns, they revealed four recurrent events — "greetings," "doing work," "clean-up time," and "group time at the circle." Each event required different social strategies on the part of the students.

Observations became more focused in the second phase of data collection, during which time attention was given to the interactional work comprising each event. Six three-year-old students served as the primary subjects. On each visit, the observer took detailed notes describing the sequence of actions for one of the six target students. Because the observer focused on one student per session, these protocols reveal the more detailed aspects of interaction that were overlooked during the initial phase of data collection. The detailed protocols were analyzed for patterns in order to determine what pupils had to do in order to be considered competent participants in each event. The results of those analyses follow.

FINDINGS

The data from the protocol analyses showed that this Montessori classroom was an interactionally differentiated environment in which four recurrent events took place — "greetings," "doing work," "clean-up time," and "group time at the circle." Members of the class used these names to refer to their activities. Each event progressed in an orderly fashion. Underlying that order were rules that guided the teacher's and pupils' actions.

EVALUATION

Greetings

Greetings occurred after the teacher and/or the assistant brought the children from the playground into the school building. Before entering the room, the students were expected to hang their coats and backpacks in the hall on hooks that were assigned to each of them. As students completed this task, sometimes with the help of the assistant or other students, they were greeted individually by the teacher.

The teacher sat on a small chair by the door to the classroom, positioning herself at eye level with the student in front of her. Before entering the classroom, each student spent 15 to 30 seconds conversing with the teacher. During these conversations the instructor greeted the pupil while shaking hands, and they spoke about a personal topic. For example, Bertha might inquire about a new pair of shoes or a colorful shirt. Additionally, she often asked pupils about what work they would like to do when they entered the room.

Students who remained silent throughout the exchange were not urged to speak. The teacher respected their silence, but there was a subtle expectation that the polite behavior during greetings was to respond to her inquiries, especially when it came to stating their work preference. The teacher was never observed telling the students how to engage in greetings; however, by participating in the routine daily, students were indirectly socialized into the expected behaviors. By October most students had internalized the rules of greetings.

Greetings functioned as a transition between playground and classroom activities. This event guaranteed at least one daily point of communication between the teacher and each student. The communication was important in this highly individualized learning environment. As will be described next, it was possible for a child to go through the entire day without speaking to the teacher again.

Doing Work

"Doing work" began as the students entered the classroom at 9:00 a.m. and continued until 11:15 a.m., at which time Bertha typically rang a tiny bell to signal the end of work. During the work period the children were free to move about the room at will. There were no seat assignments, and time was not divided into a formal schedule of language, mathematics, science, and geography lessons. The only requirement was to begin and end work at the appointed time.

Broadly speaking, the students' work was to learn, and this occurred in a highly individualized manner. Students were expected to make numerous decisions daily regarding the selection of work, the length of time spent with each material, and whether to join in group lessons or to accept the teacher's invitations to engage in individual lessons. Still, the teacher did not abandon the children to the environment. To assist them with their decisions, Bertha had established an orderly environment. Materials were grouped in practical life, sensorial, language, mathematics, and cultural areas. Within each area, the materials were placed on the shelves in the order of difficulty, beginning with the easiest ones. Only one set of each materials was provided, and it had an assigned place on the shelves. At the beginning of the school year, only a few materials were made available for the students to use. By limiting the repertoire of materials the teacher narrowed the students' choices, thereby simplifying their decision-making process. As the students learned how to use other materials, these were added to the shelves, thereby increasing their options.

Students were expected to engage in a series of individual work cycles. A cycle consisted of three phases — choosing and preparing work, doing work, and returning the materials to their proper place. Each of these phases was complex, making different demands on the pupils.

The initial phase of choosing and preparing work was highly demanding, especially for the three year olds. Because the children were expected to handle the materials properly, their choice was limited to those involving familiar materials. Since many materials were available to them, the students had to distinguish between those they knew how to use and those they did not. Students learned to use the materials in three different ways: (*a*) by receiving an individual lesson from the teacher, who would model the use of a specific material; (*b*) by participating in a group lesson during which the teacher would demonstrate the use of the material; and (*c*) by observing other students (usually the five year olds) use the materials properly.

EVALUATION

When students struggled with decisions about work Bertha would assist them. For example, on one occasion she noticed Ken (a pseudonym for one of the three-year-old boys in the class) standing by the practical life shelves and staring at the materials. She approached Ken and reminded him of the lessons he had completed. Then she asked, "Would you like to pick some work now?" Ken remained silent, so Bertha suggested the following alternative: "Would you like to work with the rice (a pouring activity) or with the beans (another pouring activity)?" Ken chose the beans. Bertha's inquiry conveyed two separate but related messages to Ken. First, during work time, students must do work. Second, students must choose their own work.

After choosing work, the students were responsible for preparing their work environment. This preparation entailed deciding whether to work at a table or on a rug. Those students choosing to work on rugs had to select one from the designated shelf and place it on a vacant spot in the classroom. The initial stage of the work cycle ended when the student chose his or her work and prepared to engage in it.

The second stage consisted of doing work. During this phase the students were expected to use the materials in the manner they had learned either during lessons from the teacher or by observing other students. This entailed using strategies that were specific to each set of materials. Once satisfied that the work was completed, the students brought the activity to a close. That is, students were responsible for the pacing of their own work.

The final phase of the work cycle consisted of cleaning up and returning the material to its proper place on the shelves. It was expected that the materials would be returned in serviceable condition for the use of other students. If the pupils spilled water or dropped beans, rice, etc., on the floor, they were obliged to clean up. Additionally, the students were responsible for pushing their chairs in and putting rugs away, which contributed to the order of the environment.

Students engaged in different numbers of work cycles daily and gave different amounts of time to each. It was not unusual for three year olds to engage in four to seven individual work cycles. The time spent on each might be as brief as one minute or as long as 30 minutes.

"Doing work" involved work cycles as described previously. Additionally, it entailed participating in individual or group lessons, or observing other students at work. The age range of students in the class provided ample opportunities for peer learning. It was not unusual for a three year old to watch attentively as an older classmate worked. Thus, the older children served as role models for the younger ones. The teacher encouraged the students to observe one another, as long as they did not interrupt work in progress. The five year olds had internalized this rule, and it was their responsibility not only to demonstrate the use of materials for their younger classmates, but also to teach them not to interrupt. For example, Howard (a pseudonym for a three-year-old student) watched Junior (a pseudonym for a five-year-old classmate) working with a set of mathematical material. At one point Howard tried to manipulate the material, and Junior reminded him in a stern voice, "No, Howard, no. This is my work. If you want to work, go get your own."

Students received individual lessons either by requesting them from the teacher or by accepting her invitation. There was no obligation for students to accept Bertha's invitation to have a lesson. During a typical lesson the teacher demonstrated the proper use of material and observed the student practicing with it until she was satisfied that the student understood its use. At that point she would leave, and the student was free to continue practicing alone or to put the material back on the shelves.

Most individual lessons were initiated by the teacher; however, students would occasionally request lessons. In order to be given an individual lesson, the student first had to secure the teacher's attention without interrupting her work. This was not easy, because the student was required to (*a*) identify junctures in the sequential flow of the teacher's activities; (*b*) position himself strategically to be close to the teacher at those junctures; (*c*) use proper procedures to let the teacher know that he was waiting to speak to her; and (*d*) wait patiently until the teacher acknowledged his overture. Only then could a student request a lesson. While these tasks may appear simple to an adult, they were highly problematic for the young children in this

EVALUATION

class. The most challenging aspect appeared to be that of waiting for the teacher's acknowledgement. Given their brief attention span, it is conceivable that a few seconds seemed an eternity to the three year olds.

The pupils most skilled at getting the teacher's attention had an advantage over others in the class in that they exerted greater controls over their own learning. When they were ready for new work, these students could make the teacher aware of their need immediately, instead of waiting for her to notice them.

The importance of knowing how to secure the teacher's attention is evident from the case of Catherine, a pseudonym for a three-year-old Anglo-American girl. Catherine was an expert at getting Bertha's attention. She knew when to approach the teacher, how to situate herself near her, and how to wait. A review of the teacher's records revealed that by November, Catherine had received many more lessons than any other three year old in the class. In this case, Catherine's social skills resulted in academic advantages for her.

Bertha used group lessons mostly as a tool for classroom management. Typically, she initiated these lessons toward the end of the work period when students became restless and began to lose concentration. The teacher invited the least-focused students to join her for lessons. The children were not required to join the lesson, but those who accepted the invitation were expected to pay attention and to comply with the instructor's directives.

During work time the students had two overriding obligations. First, they were expected to engage in focused activity, whether through individual work cycles, observation of other students, or participation in lessons singly or in groups. This interactional work was described previously. Second, the pupils were required to respect the work of the teacher and other students. This was shown by adhering to the following specific rules of courtesy: (*a*) talk softly so others can concentrate on their work; (*b*) avoid running because others may become distracted; (*c*) walking around the room is acceptable as long as it does not interrupt the work of others; (*d*) avoid walking on work rugs; and (*e*) do not interrupt others as they work.

Clean-up Time

The end of the work period and the beginning of clean-up time was indicated by Bertha's ringing a bell at approximately 11:15 a.m. When the bell rang, students were required to "freeze" and wait silently for the teacher's directions. Typically, Bertha would ask them to stop their work and to clean up.

During clean-up time, which usually lasted about 15 minutes, the five-year-old children were expected to perform the jobs for which they had volunteered earlier in the school year. For example, some students swept the floor, others cleaned the tables, and still others made sure that materials were returned to their proper place on the shelves. The five-year-old children chose younger classmates to assist them in carrying out their tasks. Thus, all of the children were engaged in cleaning up.

Bertha was also responsible for a share of the cleaning. Moreover, she monitored the work of the students and, when necessary, reminded them of their responsibilities through statements such as the following: "I'm going to look around in case someone forgot to do his or her work." On one occasion, a five-year old complained to Bertha that Maria (a pseudonym used for her three-year-old partner) was reluctant to help. The teacher approached Maria and asked her softly: "Is it possible that you don't want to help?" Maria looked sheepishly at Bertha and remained silent. At this point, the teacher invited Maria to be her helper for the day, an invitation that the young girl accepted readily. As these examples show, Bertha expected all students, regardless of their age, to assume responsibility for the care of the shared environment.

Once the students were finished with their tasks they were to sit in a circle in an open space near the front of the room, thereby signaling their readiness to engage in the last event of the day — "group time at the circle."

EVALUATION

Group Time at the Circle

Students who had finished their cleaning tasks would wait for the teacher in the circle. They were expected to sit with their legs crossed in order to avoid tripping or stepping on others. While they waited, the children had to solve problems that arose (e.g., arguments, competition for a particular spot in the circle, and pushing). The general rule was that if someone bothered a child, he or she was to move to a different spot on the circle.

The event got underway as soon as the teacher, the assistant, and all of the students were in the circle. The time together was used for group conversations and singing. Conversations generally dealt with seasonal themes (e.g., Thanksgiving). At other times, and especially during the earlier portion of the school year, Bertha guided the students in discussions of classroom procedures that seemed problematic for them (e.g., returning materials in serviceable condition to their proper place on the shelves). The one-speaker-at-a-time rule was in effect during these conversations, and pupils who called out while someone else was speaking were reminded not to interrupt.

When preparing for singing, Bertha invited the students to choose songs from their repertoire. Once the selection was made the teacher would lead the group in song. Everyone was encouraged to sing, but those students who preferred to remain silent could do so.

Socially, "group time at the circle" stands in sharp contrast to the three other events described previously in that it was the only event in which all the members of the class participated as a group. That is, to be successful, students had to orient their actions to a collective order.

DISCUSSION

To succeed in the Montessori classroom described above, students had to combine academic and social competence. Academically, they were expected to lay the foundation for future learning. The initial stage entailed gaining a sense of inner discipline through sustained engagement in the completion of work cycles. To this end, students were required to work with the materials in the classroom, particularly in the less cognitively demanding practical life exercises. The basic goal of this stage was to have the children internalize the concept of the "full work cycle," which consisted of choosing appropriate work, engaging with the chosen material until completion of the exercises, and returning the materials to their proper place once they were finished with them. Mastery of the work cycle prepared the children for the more cognitively demanding sensorial, language, mathematics, and cultural materials. In essence, learning in this classroom occurred through self-discovery.

Socially, the pupils needed to coordinate their actions with the demands of different classroom situations. These demands, which varied by instructional event, prescribed when and how the pupils were to interact with other members of the class and with the environment. In a sense the social demands of the classroom are the "hidden curriculum" of schools in that they cultivate the social skills and attitudes children will manifest as adults. Sadly, this link between classroom socialization and long-term social patterns is rarely considered by those who plan educational programs.

Micro-ethnography is a means of exploring classroom socialization and hypothesizing about the implications of social patterns for the future. In turn, such analyses might allow us to consider alternative ways of organizing classrooms so that the socialization occurring therein may match our goals for the future. Data from the Montessori classroom described in this chapter will be used to illustrate such an analysis.

The boundaries between the roles of teacher and student were less marked in the Montessori class studied than in typical public school classrooms. Admittedly, the teacher was the authority figure in the Montessori classroom, as she established and enforced rules of behavior. Even so, the students had considerable control over their own learning, and while they were required to "do work," they were allowed to make choices regarding it. They chose their activities from the many possibilities available to them, controlled the pace, and could refuse the teacher's invitation to participate in lessons. Additionally, the

EVALUATION

pupils were encouraged to learn from one another, and indeed they did, the older students often serving as role models for the younger ones.

The hierarchical structure of many public school classrooms, as evident in the popular practice of grouping by "ability," whether between or within classes, was not present in this Montessori school. Students were praised for their individual talents and were not ranked within their own age group on the basis of a uniform criterion. Because students did not compete with one another for grades, they seemed open to cooperation with their peers and helping others grow and learn.

A strong sense of individualism was promoted in this class. The children worked at their own pace, unhampered by whole-group teaching that imposes the same pace of instruction for all students. There was no formal schedule dividing the day into discrete units of instruction (e.g., mathematics lesson, group reading time) and the only obligation was to work. Furthermore, students were required to assume a fair amount of responsibility for their own learning.

Contemporary society stands to gain from the union of individual empowerment and social commitment being cultivated in this Montessori class.

The strong individualism promoted in this class was balanced by an equally strong sense of community. Because there was only one piece of each type of equipment in the classroom, students had to wait their turn if the equipment of their choice was in use. They learned to respect one another and not to interrupt those at work. They taught each other and shared responsibility for maintaining order in the class. Additionally, during group time at the circle, they learned about the constraints of the collective order.

In brief, given the way in which the teacher organized this Montessori classroom, the children were being socialized as to the importance of making individual choices with an understanding of situational constraints. Moreover, the sense of individualism was tempered by a sense of social responsibility.

Contemporary society stands to gain from the union of individual empowerment and social commitment being cultivated in this Montessori class. Our society needs citizens with solid academic preparation and critical thinking skills. Additionally, and of equal importance, it needs individuals who are prepared to make decisions in the service of the community. The threat of nuclear destruction and permanent damage to our environment, among other social concerns, calls for immediate action. As a society we cannot afford to ignore the importance of socialization experiences in the classroom and their implications for the future generations. I am not suggesting that all public school classrooms be made to conform to the Montessori model. The merit of a Montessori education in preparing the citizens of the future needs to be examined more carefully, and longitudinal studies are needed. However, on the basis of this exploratory study, I see that public education has much to learn from the Montessori system, particularly in the realm of classroom socialization. The main point I want to make here is that we need to explore alternative ways of organizing classrooms and to consider those alternatives in light of our goals for the future. Certainly, the Montessori approach seems highly suitable for contemporary society and ought to be considered an option in the public school sector.

REFERENCES

Au, K. H. (1980). On participation structures in reading lessons. *Anthropology and Education Quarterly, 11*(2), pp. 91-115.

Blau, P. & Duncan, O. D. (1967). The American occupational structure. NY: Wiley.

Bremme, D. W. (1976). Accomplishing a classroom event: A micro-ethnography of first circle. *Working paper #3 Newtown, Classroom interaction project.* Cambridge: Harvard Graduate School of Education.

Erickson, F. & Schultz, J. (1981). When is a context? Some issues and methods in the analysis of social competence. In J. Green and C. Wallat (Eds.), *Ethnography and language in educational settings* (pp. 147-160).

Florio, S. (1978). *Learning how to go to school: An ethnography of interaction in a kindergarten/first grade classroom.* Unpublished doctoral dissertation, Harvard University.

Florio, S. & Shultz, J. (1979). Social competence at home and at school. *Theory into Practice, XVIII*(4), pp. 234-243.

Griffin, P. & Humphrey, F. (1978). Talk and task at lesson time. In R. Shuy & P. Griffin (Eds.), *The study of children's functional language and education in the early grades.* Final report to the Carnegie Corporation of New York. Arlington, Va.: Center for Applied Linguistics.

Gumperz, J. J. (1981). Conversational inference and classroom learning. In J. Green and C. Wallat (Eds.), *Ethnography and language in educational settings* (pp. 3-23). NJ: ABLEX.

Gumperz, J. J. (1977). Sociocultural knowledge in conversational inference. In M. Saville-Troike (Ed.), *28th Annual Roundtable Monograph Series On Language and Linguistics.* Washington, D.C.: Georgetown University Press.

Hymes, D. H. (1972). Introduction. In C. Cazden, V. John and D. Hymes (Eds.), *Functions of Language in the classroom.* NY: Teachers College Press.

Kahn, D., Boehnlein, M. M. & Villegas, A. M. (1988). *Interim results of the national Montessori public school study.* Paper presented at the First Public School Montessori Conference, Kansas City, Missouri.

McDermott, R. P. (1976). *Kids make sense.* Unpublished doctoral dissertation, Stanford University.

Mehan, H. (1979). *Learning lessons.* Cambridge: Harvard University Press.

Mehan, H. (1978). Structuring school structure. *Harvard Educational Review, 8R*(1), pp. 32-64.

Shultz, J. (1976). *It's not whether you win or lose but how you play the game. Working paper No. 1, Newtown Classroom Interaction Project.* Cambridge: Harvard Graduate School of Education.

Van Ness, N. (1977). *Social control and organization in an Alaskan Athabaskan classroom: A micro-ethnography of 'getting ready' for reading.* Cambridge, Mass: Harvard Graduate School of Education Qualifying Paper.

Villegas, A. M. (1986). *The social organization of teacher-directed Spanish and English reading lessons in high- and low-achieving groups in a bilingual classroom.* Unpublished dissertation, New York University.

Williams, P. J. (1987). Cincinnati: Developing the Montessori magnet school. *North American Montessori Teachers' Association Journal, 12*(2), pp. 37-42.

EVALUATION

THE CULTURE OF A MONTESSORI CLASSROOM

Summary

A. **Events**

  1. "*Greetings*" — teacher greeted each student individually and invited him/her to enter the room to "do work."
  2. "*Doing work*" — students were expected to engage in individualized or small group learning activities.
  3. "*Clean-up time*" — students were expected to assume responsibility for maintaining the order of the classroom.
  4. "*Group time at the circle*" — only event in which all members of the class participated as a group. To be successful, students had to orient their actions to a collective order.

B. **Doing work** — There were two overriding rules: (a) to engage in work; and (b) to respect the work of others.

  1. *Engaging in individual work cycles*
    a. Choose set of material to work with
    b. Be familiar with materials chosen
    c. Use the materials properly
    d. Pace own instruction
    e. Clean-up
    f. Return materials to proper place on shelves in serviceable condition for others to use
  2. *Observing others at work* — peer teaching/learning
    a. Do not interrupt the work of others
  3. *Getting a lesson from the teacher*
    a. Students were free to accept or decline the teacher's invitation to a lesson
    b. Once a student accepted the teacher's invitation, he/she was expected to be attentive
    c. Students could request lessons from the teacher, but to do so they had to secure the instructor's attention without interrupting her work. This consisted of: (i) identifying junctures in the sequential flow of the teacher's activities; (ii) locating themselves strategically near her at those junctures; (iii) signalling to the teacher that they were waiting for her; and (iv) waiting patiently until the teacher acknowledged them.

C. **Socialization — what attitudes were the students internalizing?**

  1. Strong sense of individualism
  2. Sense of social responsibility and group cooperation
  3. Devaluation of strict hierarchical structure
  4. An awareness of the necessity of making choices of their own and of acting on those choices, with an understanding of situational constraints
  5. Cooperation rather than competition
  6. Value of diversity

TWO SAMPLE CASE STUDIES

by Ana Maria Villegas, Ph.D.

INTRODUCTION

The case studies presented herein were prepared with a twofold purpose. First, they provide qualitative descriptions of the development of two students and complement the quantitative analyses contained in the main body of this evaluation report. Second, the cases illustrate the concept of academic foundation which is considered by the Mitchell Montessori staff to be crucial to children's development. Specifically, the development of the two pupils selected for the studies is explained in terms of the variables comprising the concept of academic foundation. Before presenting the case studies, a review of this concept is in order.

The concept of academic foundation builds on the view of learning shared by the Mitchell Montessori teachers and principal. From their perspective, learning is not the mere passing of information from teacher to students. Instead, learning is considered to be a process by which the child develops strategies for the acquisition of knowledge and skills. Thus, the important task of schools is to provide students with a general foundation that will enable them to acquire more specialized knowledge and skills throughout their school career. According to the Mitchell staff, this academic preparedness or foundation is comprised of ten variables:

- a positive attitude toward school
- inner security and sense of order
- pride in the physical environment
- abiding curiosity
- a habit of concentration
- habits of initiative and persistence
- ability to make decisions
- a sense of independence and self-confidence
- self-discipline
- a sense of responsibility to other members of the class, school, and community

These ten variables served as the organizing framework for describing the growth of the two children depicted in the case studies.

Three sources of data were used in preparing the case studies — descriptive notes of the pupils' classroom behavior; interviews with one parent of each child; and the teacher's pre- and post-ratings of the children for each of the academic foundation variables. Observational data were collected from August through December of 1988 by two trained observers. Each child was observed on seven separate occasions, four of those observations extending throughout the entire half-day session attended by the three year olds. During the observations, attention was given to the interactions of the student. The interviews with parents were conducted in May 1989. During the interviews, the parents were asked to comment on changes they had noted (if any) in their child regarding each of the ten academic foundation variables. To the extent possible, parents were asked to provide specific examples of these changes. Finally, the teacher's June 1989 academic foundation ratings for each pupil were compared to the September 1988 ratings to determine her perception of their growth. These three sets of data were combined to produce the two profiles that follow.

EVALUATION

CATHERINE

Catherine is an Anglo-American girl of middle-class background. Catherine was three years of age when she started the Montessori program in September 1988. This was Catherine's first year in school; however, the school experience was not totally foreign to her because she has an older sister who had started school the year before. Furthermore, Catherine's mother and father, both professional educators, reported having spent a portion of the summer of 1988 preparing their daughter for the Montessori program. As part of that preparation, the parents frequently drove by Mitchell with Catherine to show her the school. Moreover, they often spoke to the child about the schooling experience. Thus, the parents facilitated the transition between home and school for the young girl.

Positive attitude toward school

When the school year began, Catherine seemed ambivalent about school. According to Catherine's father, the school schedule was very demanding for her initially, and it was not until December that the three-year-old girl began to handle the demands with ease. Catherine's father reported that by December his young daughter began to "look forward to going to school daily." The classroom observations lend support to this assessment of Catherine's shifting attitude toward school. For example, Catherine seemed tired and lacking in focus initially; however, as the school year progressed, she seemed more energetic and became more focused on work. By December she appeared very comfortable in the classroom. She looked happy, and exhibited curiosity and interest in work, which indicated that she was developing a positive attitude toward school.

Inner security and sense of order

According to the teacher, Catherine made important gains during the school year regarding her inner security and sense of order. At the beginning of the school year, Catherine was able to complete work previously presented to her by the instructor. While doing so, she handled the materials properly. As the year came to an end, the teacher reported that her young pupil displayed a more open attitude toward work, more spontaneous care of the environment, and greater organization during activities. The field notes support the instructor's view of Catherine's growth. By December Catherine seemed secure. This sense of security was evident as she interacted with adults and other children in the room. She handled materials adeptly and carefully. In brief, Catherine had internalized the rules of the classroom. She seemed to know what was expected of her and acted accordingly.

Pride in the physical environment

The information gleaned from the classroom observations, interview with parent, and the teacher's pre- and post-ratings suggest that Catherine began her schooling with a highly developed sense of pride in her physical environment. According to the teacher, Catherine completed her work and maintained good order consistently throughout the year. Catherine's father praised her organization at home, and as an example cited that "her room is always tidy." Analysis of the field notes reveals that the young girl was cautious and meticulous about her work. She handled materials purposefully and carefully, and always returned the materials to their proper place on the shelves.

Abiding curiosity

Catherine's curiosity expanded as she became more secure in the classroom environment. The field notes show her to be highly curious. She frequently sought new work. She worked intently and in an engaged and focused manner. She often took the initiative to request new lessons from the adults in the classroom. Usually transitions between activities were brief because her curiosity quickly attracted her to new work. In the teacher's view, Catherine was involved with the materials "to the point of interest." According to the father, Catherine's sense of curiosity is reinforced at home consistently. For example, her parents encourage her to ask questions and speculate about matters of importance to her. Thus, it seems that the teacher and parents both strengthened Catherine's sense of curiosity.

EVALUATION

Habit of concentration

According to the teacher, Catherine made significant progress over the span of the school year regarding her habit of concentration. As the year began, the three year old demonstrated limited concentration and was never totally absorbed in her work. In contrast, by June of 1989 the instructor perceived her pupil to be nearly totally absorbed in and highly satisfied with her work. The observations confirmed this change. Initially, Catherine seemed somewhat distracted and not focused on work. As time progressed, she became more centered, increased her attention span, and rarely became distracted. This was evident during both individual work cycles and lessons with the teacher. Catherine's father noticed considerable progress in her ability to concentrate. In his own words, "she is more focused now than when she began school. Here at home, she attends to and completes tasks with greater ease."

Habits of initiative and persistence

In the instructor's view, Catherine began the school year lacking somewhat in initiative and persistence. Her attention seemed scattered, and she was dependent on adults. However, by June 1989, the teacher considered the young girl capable of following through with work and completing it satisfactorily. The field notes suggest that Catherine was more advanced in this area than the instructor assumed. Analysis of the field notes reveals that Catherine initiated most of her own activities without adult assistance. She frequently initiated contact with the teacher, but typically did so to advance an activity that she had chosen for herself or to get new lessons from the instructor. When seeking the teacher's attention, she was persistent. She knew how to situate herself near the instructor, make eye contact with her, and wait patiently until the adult responded to her. Unlike most other three-year-old children in the class who generally gave up trying to get the teacher's attention if she did not notice them within a few seconds, Catherine was willing to wait her turn. Consequently, Catherine nearly always managed to engage the teacher when she sought to do so. Her persistence in seeking the instructor's attention gave her an academic edge over other children. For example, by November, Catherine had received several more lessons than any other three year old in the class.

Ability to decide

While initially hesitant to make decisions, Catherine soon expanded her ability in this area. In the teacher's view, she learned to make appropriate choices without adult direction. The field notes show that decision making was one of Catherine's major strengths. She wasted little time choosing work, as was evident in the brief transition periods between work cycles. Additionally, she made her choices independent of adults or other children in the room. Catherine's father saw major progress over the span of the year regarding her ability to make decisions. As he explained, before Catherine began the Montessori program she was given many opportunities to make decisions at home, but was often hesitant to do so. By the end of her first year in the program, Catherine was able to make decisions on her own with greater ease. Her father attributed this change to the girl's Montessori experience.

Sense of independence and self-confidence

Catherine's father considers her to be highly independent and self-confident. This view is shared by Catherine's teacher who describes her as being happy, interested, involved, and able to work alone. The field notes substantiate the claims made by both the father and teacher. For example, Catherine rarely hesitated when approaching older students whom she did not know. At times she joined group lessons given in Spanish, even though she did not speak the language. She was brave, confident, and independent.

Self-discipline

The instructor considered Catherine to be consistently self-disciplined. In her view, the young girl kept up with work, moved at her own pace, and got along well with her peers. The observational data support the teacher's impression. Catherine monitored her own work. Her behavior was purposeful and controlled. She seemed highly focused and in harmony with the group.

Sense of responsibility to others

Both Catherine's father and teacher concurred that the young pupil has a fairly well-developed sense of responsibility given her age, but neither noticed significant changes in this area over the school year. At home, Catherine was helpful to her parents and sister. In school, she performed classroom jobs. The field notes show that Catherine was highly responsible for her own behavior but took limited interest in the work of others. However, she acted in socially appropriate ways. When joining groups she was quiet and polite. When group tasks demanded it, she cooperated with others.

Summary

The data presented in this case study show that Catherine expanded her foundation for learning in significant ways during the 1988-89 school year. The young student improved her attitude toward school as she became accustomed to the demands of the school schedule. Her inner sense of security increased as she became knowledgeable of the rules of the classroom. This knowledge augmented her sense of order and fostered her curiosity. With time, Catherine enhanced her abilities to concentrate on work and to make decisions. Additionally, she became more persistent and took more initiative. Growth in these areas strengthened Catherine's sense of independence and self-confidence.

The data showed no major changes in Catherine's sense of pride in the physical environment, self-discipline, and sense of responsibility toward others. However, both the father and teacher reported that she had begun the school year already highly developed in these three areas.

Catherine is an example of a highly successful young student. In her case, one can see the profound impact of the home-school link. Specifically, the ten basic attitudes toward learning and school valued by the Mitchell Montessori staff were valued by Catherine's parents as well. This close match in values led to similar socialization experiences in the home and school contexts, and supported her academic development throughout the school year.

HARRIET

Harriet is an African-American girl of lower middle-class background. She began the Mitchell Montessori Program as a three year old in August 1988. Her parents learned about the program by reading an advertisement in the local newspaper inviting interested parties to inquire about special educational options in the Denver Public Schools. At the time, they had no first-hand knowledge about the Montessori approach to education, but were well aware of its high level of success in the private school sector. For this reason, Harriet's parents submitted an application to the program on her behalf.

Positive attitude toward school

Harriet's father reported that the young pupil looked forward to going to school even before beginning the program. In his view, Harriet experienced no fear of separation from home. Once school began, she talked frequently to her parents about what had transpired during the day. The field notes lend support to the father's assessment of Harriet's early positive attitude toward school. For example, nearly all three-year-old pupils in the class, particularly those of minority background, cried during their first day in school. In contrast, Harriet seemed happy to be there, and appeared ready and eager to participate in the planned activities. Thus, the interview and observational data suggest that the young girl was positively predisposed to school from the beginning of the school year. Harriet's teacher, however, noted some signs of separation anxiety at the beginning of the year which disappeared with time. In the instructor's view, by the end of the year the child demonstrated a strong desire to be in school.

Inner security and sense of order

According to the teacher, Harriet made some progress regarding her inner security and sense of order over the span of the school year. In her assessment, the young girl constantly needed verbal reassurance from adults at the beginning of the school year. She seemed blind to the environment, and she performed her work carelessly and incompletely. By the end of the year, the teacher reported that Harriet typically completed work that had been presented to her. Additionally, she seemed to handle the materials properly. As was evident from the observational data, Harriet frequently sought attention from the adults in the class. Without this attention, the child lost interest in her work and became distracted. Her own sense of order seemed to clash with what was expected of her in the classroom. She had difficulty attending to tasks and appeared unable to work independently. Her behavior was observed to be inappropriate on many occasions. She interrupted the work of other pupils, and was frequently observed not attending to a task. However, as the school year progressed, Harriet became more work-oriented and her behavior conformed more closely with the rules of the classroom. Harriet's father noticed a slight improvement in the young child's sense of order over the school year. While aware of Harriet's difficulty in this area, the father seemed at a loss regarding the kind of help he could offer his daughter at home. In his own words, the problem stemmed from "differences in the way things are done at home and in school." However, he was unable to pinpoint what these differences were.

Pride in the physical environment

Harriet's teacher noticed little progress throughout the year regarding her pupil's sense of pride in the physical environment. In the instructor's view, Harriet was somewhat careless, and she had to be reminded often to return materials to their proper place on the shelves. The field notes also show that the physical environment was not a high priority for Harriet. She often failed to put materials away after using them. She jumped over work rugs and generally moved around the room carelessly. Harriet's father reported an improvement in the girl's care of the home environment as a consequence of her participation in the Montessori program. For example, at times she told her parents that it was important for her to be orderly, thereby demonstrating the impact of her socialization in school. However, her home behavior lagged behind her expressed concern for order.

Abiding curiosity

The observations show that Harriet was very curious about social matters, but less so regarding academic concerns. She seemed more interested in chatting with other students in the class than in doing work. While working directly with the teacher, Harriet appeared curious and asked many questions of her. However, in the teacher's absence, Harriet seemed relatively disengaged from her work. According to the instructor, the young student was fearful of trying new work and rarely became involved with the material to the point of interest. It is interesting to note that the school data revealed little improvement in Harriet's academic curiosity over the span of the year; however, the girl's father reported significant growth in this area. As he explained, midway through the school year, Harriet began to ask more complex questions at home. Additionally, she persisted with the questioning until receiving answers that were satisfactory to her.

Habit of concentration

The field notes and the teacher's assessment of Harriet's habit of concentration suggest that the young girl was weak in this area of academic foundation. Harriet was easily distracted, and she often interrupted other pupils as they worked. Very slight progress was observed in Harriet's pattern of concentration throughout the year. In contrast, the girl's father reported considerable improvement in her ability to concentrate on tasks undertaken at home. Specifically, he mentioned that his daughter's attention span had increased dramatically over the year. He attributed this behavioral change to the girl's Montessori schooling.

Habits of initiative and persistence

When academic tasks were concerned, Harriet demonstrated little initiative and persistence in the classroom. In the teacher's view, the child was highly dependent on adults, her attention was somewhat scattered, and she rarely completed her work. There was little evidence of change in this pattern during the school year. However, Harriet's father had a radically different opinion of the girl's habits of initiative and persistence. While at home, Harriet initiated her own activities and persisted until attaining the goals she had set for herself, regardless of the complexity of the task.

EVALUATION

Ability to decide

At the beginning of the school year Harriet struggled with making decisions in the classroom. In the instructor's view, Harriet was inactive because she lacked the ability to make decisions. Part of the problem seemed to be the child's fear of failure. By the end of the school year, Harriet had made significant progress in this area. In the teacher's assessment, the young girl was more at ease in making choices without needing adult direction. Progress in the area of decision making was evident at home as well. According to the father, Harriet was more assertive when deciding. Additionally, she monitored the decisions made by her parents and at times pointed out inconsistencies in their logic.

Sense of independence and self-confidence

Harriet rarely seemed timid when interacting with the students or adults in the class. However, she was highly dependent on others to get work done. When it came to work, she appeared uninterested and uninvolved unless others assisted her with the task. This behavior changed over time, however. By the end of the school year, the teacher reported that Harriet was able to work alone for longer periods of time, and seemed more engaged in her work.

Self-discipline

Progress was noted during the school year regarding Harriet's self-discipline. Initially, the young girl displayed disruptive behavior and failed to conform to the rules of the class. As time progressed, she became more focused on work and learned to get along better with peers. Improvements were observed in Harriet's home behavior as well. For example, her father reported a decrease in arguments with other children in her home environment. However, he admitted that his daughter needed to work harder to improve her self-discipline.

Sense of responsiblity to others

Positive changes in Harriet's sense of responsibility toward other members of her class were evident to the teacher. Specifically, the young pupil frequently interrupted the work of her classmates at the beginning of the year. At times she displayed aggressive behavior toward other students. By the end of the year, however, she was more likely to perform classroom jobs and to share with others.

Summary

A consistent picture of Harriet's development emerges from the classroom observation data and the teacher's ratings of the child's academic foundation. A significant improvement was noted in Harriet's ability to make decisions. Moderate progress was detected in the child's attitude toward inner security and sense of order at school, independence and self-confidence, self-discipline, and sense of responsibility to others. Lastly, little or no change was evident in Harriet's sense of pride in the physical environment, curiosity regarding academic matters, and habits of concentration, initiative and persistence. In brief, Harriet experienced moderate growth in academic foundation during the 1988-89 school year.

It is interesting to note that the view of Harriet's development derived from the classroom observations and the teacher's ratings clashes with the father's impression of the child's development, as observed at home, in all but two areas — decision making and self-discipline. In each discrepant case, Harriet's father had a more favorable view of the young girl's progress than that held by the teacher and/or evident from the field notes. At one point during the interview, the father expressed his awareness of differences in the way life is organized at home and in school for Harriet. While he was unable to expand upon those differences, the fact that his assessment of Harriet clashed with the school's assessment of her seems to substantiate the claim.

EVALUATION

CONCLUSIONS

The findings from the two case studies point to the importance of the home-school connection in students' school success. As appears from these data, the strong link between home and school experienced by Catherine seemed to have supported her development in school. In Harriet's case, it appears that the home-school connection was weaker. Harriet's father seems less aware of the expectations of the Montessori classroom, and imagined differences between home and school. These differences may account for the slower progress made by Harriet during the school year.

EVALUATION

RESEARCH AND EVALUATION SUMMARY OF MONTESSORI PROGRAMS

by Mary Maher Boehnlein, Ph.D.

- ***Early research gives evidence that the Montessori method and environment are beneficial to low and middle SES children.***
- ***Current research corroborates the early findings, in particular, the importance of Montessori preschool experience.***
- ***Of specific importance for best results long-term are: the full three-year preschool program, trained Montessori teachers, and multi-age groupings.***

Public schools considering the implementation of Montessori programs need some assurance that the time, effort, and money invested will yield positive results, if not better results than other programs. Schools also will want to monitor their own implementation through within-district research. This chapter provides a brief overview of research of the Montessori approach and describes current public school research procedures.

INTRODUCTION

Between 1913 and 1985, 244 studies of the Montessori approach were conducted. Of these, most were conducted between 1970 and 1980. Forty studies were of academic achievement, twenty-eight of teachers, schools, and the effects of teacher training, twenty-three were concerned with the effects of the Montessori method on cognitive or intellectual functioning, and twenty-five studies were of low socioeconomic status (SES) children exclusively. The remaining studies were of the history and philosophy of the method and the other curriculum areas. In an analysis of Montessori research, Boehnlein (1988) focused on several areas of the research of interest to public schools. The analysis is summarized below.

Do low socioeconomic children benefit from Montessori preschool programs?

Few of the reported studies were of full three-year Montessori preschool programs yet the analysis revealed that low SES children benefitted significantly. Often the significant differences in competence, social and academic, did not appear until later in the child's school career. Longitudinal studies by Karnes (1969, 1978 & 1983), Miller (1970a, 1970b, 1971, 1975, 1983a, 1983b, & 1984), and Stodolsky (1969a, 1969b, 1970, 1972, 1973, & 1974) showed nonsignificant differences immediately after the program but in subsequent years the Montessori children exhibited increased competence, better achievement, and a more positive attitude toward school than their peers from other preschool programs. Montessori children did show significantly superior performance on measures of autonomy and curiosity after one year of Montessori preschool. Karnes' studies showed significantly higher numbers of Montessori children completing school.

Dr. Mary Boehnlein is Associate Professor and Chairperson of Specialized Instructional Programs at Cleveland State University. She has thirty years teaching experience at the elementary, secondary and university levels.

EVALUATION

Stodolsky's work showed that low SES children used preschool environments differently than middle SES children. The data indicated that low SES children do benefit from a structured, cognitive or academically oriented preschool rather than the traditional preschool emphasizing socialization.

Does Montessori preschool experience increase low SES children's ability to benefit from traditional educational practices during elementary and secondary school?

Without a doubt, Montessori preschool experience had a positive, lasting effect on low SES children, particularly in academic achievement. This was true even when the Montessori subjects' intelligence test scores were similar to children in the other experimental programs. Karnes, in particular, noted that in her sample the Montessori children's intelligence test scores were lower than those of the other groups, yet more of them persisted in school and more completed high school. Both Karnes and Miller attribute to the Montessori program the development of certain attitudes and work habits that are needed to succeed in school including an "I can do it" attitude reflective of high self-esteem.

Do middle SES children benefit from Montessori school experience and in what way(s)?

Again the research results were in favor of the Montessori program children. In particular, Montessori program children demonstrated higher achievement, better language skills, more initiative, better mathematical skill, and better higher level thinking and memory skills. Back (1977) found that Montessori children showed an intellectual aggressiveness characteristic of highly intelligent children. They requested more cognitive information from the adults yet still socialized more with peers than did the British Infant School children. Fleege et al. (1967) found that Montessori children increased their intelligence test scores significantly more than non-Montessori children and also evidenced the acquisition of positive learning traits more definitively. His subjects made significant gains in verbal ability.

Does the Montessori experience aid in social development?

A persistent criticism of the Montessori preschool program by traditional educators is that the individualized nature of most of the activities is deleterious to the children's social development. The analysis of 20 studies in this area demonstrated rather strikingly that Montessori children are as much, if not more, socially developed than children in other programs. Regardless of the limited duration of the Montessori experience or the aspect of socialization studied, Montessori children fared very well. They were described as having high levels of self-confidence, participating in much more social interaction with their peers for longer periods of time than their non-Montessori peers. They were as self-reliant as other preschoolers, showing equal internalization of social mores and self-control and seeking as much interaction with others (Baines & Snortem, 1973; Berk, 1970 & 1973; Berger, 1969 & 1970; Goldberg, 1975; Karnes et al., 1978; Stodolsky & Karlson, 1972; Tatem, 1977; Reuter & Yudnik, 1973; and Wirtz, 1976).

Does Montessori experience enhance curiosity and inventiveness?

Studies such as Miller and Dyer (1971 & 1975) and Fleege et al. (1967) found that Montessori children showed significantly increased perceptual abilities, curiosity, and inventiveness, all abilities thought to contribute to success in the academic environment.

Do Montessori classrooms differ from those of other programs?

Miller (1970a) asked this question in order to attribute differences in results to differences in program implementation. She found that Montessori trained teachers realized and articulated their goals better than other teachers, were less verbal with the children, and that their classrooms reflected their training.

EVALUATION

Do children use the Montessori program differentially?

Considering the richness of the Montessori environment, several researchers were interested in how preschoolers responded to that environment. Of particular interest was how the child used the environment given freedom of choice. Banta (1970) and Stodolsky (1973 & 1974) found that children, whether low or middle SES, differentiated their time among the choices of activities in the Montessori classroom. Banta's study showed that given the opportunity to choose interesting work, children do become autonomous. Stodolsky also found autonomous behavior including more task orientation than among children in other preschool environments.

In summary, the research gives evidence that the Montessori method and environment have unique characteristics that aid both the low and middle SES child in development of cognitive, social, and academic functioning. However, because of limitations in some of the studies, many questions remain unanswered or partially answered. Given that most of the programs studied were of short duration and the children did not have the benefit of a complete three year cycle of a Montessori program, the research is quite positive. The current research discussed in the next section provides positive evidence of the benefits of an authentic, three year Montessori preschool program and of the complete elementary program.

CURRENT STUDIES

Denver Public Schools

In 1976 the Denver schools initiated the Mitchell School Montessori program beginning with three year olds. They simultaneously initiated the collection of data to report the results of the program. Three studies have been completed to date by Villegas and Biwer (1987) and Villegas (1988 & 1989) that demonstrate the power of using quantitative as well as qualitative research methodologies such as microethnography. The qualitative approaches are able to quantify the social systems operating in classrooms and describe the interaction of teacher with students and students with students. Villegas is the first to use these approaches to study Montessori classrooms, although earlier studies by Miller analyzed video tapes of classroom activity.

Villegas and Biwer (1987) evaluated the success of various strategies to involve Hispanic, Black, and Anglo-American parents in their children's education at the Mitchell Montessori school. Strategies implemented were designed to maintain continuity between the home and school environments and to encourage joint responsibility for the education of the children. Attendance, participation, and satisfaction of 175 parents with the parent involvement program were studied. Various strategies were attempted and included special orientation sessions, parent-student open house days, classroom observations, parent-teacher conferences, parent education sessions, and school information nights. Ethnic group response to the programs indicated that the most highly attended activities were orientation sessions, classroom observations, and parent-teacher conferences, with a range of 82 to 100 percent parent participation. Moderate response was obtained for evening parent education sessions. Anglo students tended to be represented at parent activities more frequently than Blacks and Hispanics, but the latter attended in higher numbers than parents of children in non-Montessori programs. Parents indicated a high level of satisfaction with the program which was corroborated by the low attrition rate from the school in a district that generally experiences an average of 75 percent turnover of its student population.

Villegas (1988) studied the process by which three-year-old Hispanic, Black, and Anglo-American children were socialized into a Montessori classroom at the Mitchell Montessori School. Mitchell's particular focus is on promoting ethnic integration among students. Villegas defined skillful classroom competence as involving academic knowledge and skills as well as the ability to use socially appropriate ways of gaining access to and displaying academic content. That is, to know with whom, when, and where they could speak, and how to act at any given time. Observation data were collected over a period of six months, and the field notes were analyzed for recurrent patterns. She described what students needed to do to be judged competent in the classroom community, how the students learned the social rules of the classroom including descriptions used by various ethnic groups of children, and implications for the socialization of young children into other Montessori and non-Montessori classrooms.

Villegas found that to succeed in the Montessori classroom students had to combine academic and social competence. Students gained a sense of inner discipline through sustained engagement in and completion of a work cycle, choosing appropriate work, engaging with the chosen material until completion of the exercise, and returning the materials to their proper place once finished with them. Acquiring this inner discipline appeared to prepare the children for more cognitively demanding materials that promoted learning through self-discovery.

Socially, the children had to adapt to differing classroom situations. However, in the Montessori classroom, Villegas found the boundaries between teacher and pupil roles were less marked than in the typical public school classroom. Although the Montessori teacher was an authority figure, the students had considerable control over their own learning. Pupils were encouraged to learn from one another, and the older students served as role models for the younger children. Villegas found no grouping by ability and no competition for grades. Rather she found promotion of cooperative learning yet also a strong sense of individualism. Because there are not multiple sets of materials in Montessori classrooms, children learn to wait their turn and to respect one another by not interrupting another's work. There was evidence of shared responsibility for maintaining order in the classroom. This sense of social responsibility and community service was considered as important as solid academic preparation.

In another study, Villegas (1989) used a case study approach to provide qualitative descriptions of the development of two students to complement the quantitative analyses of a larger study. In addition, the cases illustrate the concept of academic foundation which is considered by the Mitchell Montessori staff to be crucial to children's development. Learning is considered to be a process by which children develop strategies for the acquisition of knowledge and skills. Villegas studied the ten variables enumerated by the Mitchell staff providing students with a general foundation that would enable students to acquire more specialized knowledge and skills throughout their school career. The variables studied were:

- a positive attitude toward school
- inner security and a sense of order
- pride in the physical environment
- abiding curiosity
- a habit of concentration
- habits of initiative and persistence
- ability to make decisions
- a sense of independence and self-confidence
- self-discipline
- a sense of responsibility to other members of the class, school, and community.

Villegas reported that differences in the progress of two children could be attributed to the home-school connection. One child seemed to have a strong link between home and school experiences and made better progress than the child whose father seemed less aware of the expectations of the Montessori classroom. However, both children made significant progress towards the acquisition of the above listed variables.

Milwaukee Public Schools

Duax (1989) conducted a follow-up study of children who had attended the McDowell Montessori School in the Milwaukee Public School system. The school had been in operation since 1976 and has been recognized by the Association Montessori Internationale for making significant strides toward the full implementation of Montessori theory and practice. The school has a complete Montessori program beginning with three year olds. Duax's study is one of the few studies of Montessori elementary school experience and provides valuable data for schools considering the implementation of a Montessori program.

608

Duax used a representative sample of graduates of the program who were then in the middle school program in the district. Fifteen children were randomly selected and matched the total population of 84 graduates of the classes of 1987 and 1988. All children had entered the program at age four. Thirty-six percent were eligible for free hot lunch and 50 percent were minority children.

Children's scores on the Iowa Test for Basic Skills and a survey questionnaire completed by twenty-seven middle school teachers were used to collect data. The results of the standardized test showed that the Montessori children achieved high scores; 84 percent scored above the 50th percentile. The survey asked teachers to rank the Montessori students on such aspects of school performance as responsibility, multicultural awareness, understanding of global issues, fundamental human needs, and displaying leadership. On a ten point scale every Montessori graduate scored above the 5.5 mean. Particularly high were: the ability to use basic skills to succeed in middle school, responsibility, enthusiasm for learning, individualistic attitudes (not afraid to be different from peers), and demonstration of multicultural awareness.

Marotta Montessori Schools of Cleveland

The Marotta Montessori Schools of Cleveland did a follow-up study of 58 graduates of its preschool program currently attending kindergarten through sixth grade in the Cleveland Public Schools. Takacs and Clifford (1988) compared the standardized test scores of 58 children in reading and mathematics with the building grade averages in the 27 schools the children attended. Comparison to national percentile norms also were made. Their teachers were individually interviewed using a questionnaire which assessed six aspects of Montessori schooling hypothesized to be related to achievement. Correlations between teacher ratings and differences in test scores were examined. Compared to classmates bussed from the same neighborhoods to the same classrooms, Montessori trained children achieved one stanine higher in reading achievement and 75 percent of these low SES children scored above school norms on the California Achievement Test. Mathematics achievement was one-half stanine above comparison peers. The strongest correlations between teacher ratings and achievement were with regular attendance and parent involvement. Length of time in a Montessori preschool (six months to three years) was significantly related to autonomy and pursuit of a task beyond the minimum. The longer the preschool experience the more autonomous the child.

In summary, recent studies corroborate earlier findings and present strong evidence of the value of Montessori programs to children's social and academic development.

Franciscan Montessori Earth School

Glenn (1989) did a longitudinal assessment of graduates of a private Montessori school compared to public school counterparts. Among other things measured, Glenn asked children to select an occupation they wanted to pursue when finished with school. The Montessori group chose occupations that are considered investigative such as being a botanist, computer programmer or scientist while the comparison public school group chose social-type occupations such as being a teacher or social worker. Glenn also found that the longer the child stayed in the Montessori program, the greater the academic achievement, particularly in the language arts, and the higher the creativity level. As in Miller's studies, Glenn found that males were rated significantly higher in reading ability as compared to females.

CONCLUSION

In summary, recent studies corroborate earlier findings and present strong evidence of the value of Montessori programs to children's social and academic development. In particular there is mounting evidence of the important contribution the Montessori preschool experience makes to children's sustained cognitive and affective development. The recent studies with inner city children from more complete Montessori programs validate the small number of earlier studies which examined children from minimum Montessori experiences through a variety of later school experiences. What appears to be emerging from this research is solid evidence that the Montessori preschool and elementary environments help to develop sustaining habits and attitudes necessary to social and academic success. There appears to be an appropriate blend of freedom to choose engaging and self-directed, developmentally appropriate learning activity within a supportive and natural (multi-aged grouping) social milieu. It must be noted that these strong results are coming from schools with fully trained Montessori teachers, unlike earlier studies which often used non-certified teachers. If research is to inform education decisions, public schools considering the implementation of Montessori schools should heed what past research has discovered:

1. A complete three-six year old program provides the best results long term.
2. Montessori trained teachers are vitally necessary to implement the program.
3. Multi-age grouping and the full complement of Montessori apparatus and materials are essential.

The above characterize the schools in the current research studies. Continual research on a wider scale will provide schools with the data needed to implement programs of excellence.

REFERENCES

Back, S. (1977). A comparison of cognitive and social development in British Infant and Montessori preschools. (Unpublished doctoral dissertation, Temple University).

Baines, H.R. & Snortum, J. R. (1973). A time-sampling analysis of Montessori versus traditional classroom interaction. *Journal of Educational Research*, *66*, 313-316.

Banta, T. J. (1970). *Montessori research project: Progress report.* (ERIC Document Reproduction Service No. ED 056 744).

Berger, B. (1969). *An investigation of Montessori versus conventional prekindergarten training with inner city children: An assessment of learning outcomes.* Paper presented at the annual meeting of the American Educational Research Association, Los Angeles. Also in Ellis Evans (1975). *Contemporary influences in early childhood education.* New York: Holt, Rinehart, & Winston (1969). *A longitudinal investigation of Montessori and traditional prekindergarten training with inner city children: A comparative assessment of learning outcomes: Three part study.* New York: Center for Urban Education. (ERIC Document Reproduction Service No. 1 ED 034 588).

Berger, B. (1970). An investigation of Montessori versus conventional prekindergarten training with inner city children: An assessment of learning outcomes. *American Montessori Society Bulletin*, *8*(2), 1-10.

Berk, L. (1970). *Effects of variations in the nursery school setting on environmental constraints and children's modes of adaptation.* Paper presented at the annual meeting of the American Educational Research Association, Minneapolis, Minnesota. (ERIC Document Reproduction Service No. Ed 040 421).

Berk, L. (1973). *An analysis of activities in preschool settings. Final report.* Washington D.C.: National Center for Educational Research and Development. (ERIC Document Reproduction Service No. ED 099 131).

Boehnlein, Mary (1988). *Montessori research: Analysis in retrospect.* Cleveland: The North American Montessori Teachers' Association.

Duax, Tom (1989). Preliminary report on the educational effectiveness of a Montessori school in the public sector. *The NAMTA Journal*, *14*(2), 56-62.

Fleege, Urban; Black, Michael, & Rackauskas, John. (1967). *Montessori pre-school education.* (Report No. 5-1061). Washington D.C.: Office of Education.

Glen, Christopher. (1989). A comparison of lower and upper elementary Montessori students with a public school sample. *The NAMTA Journal*, *14*(2), 63-68.

Goldberg, L. (1975). IES Arrow-Dot longitudinal study of personality development in preschool children. *Perceptual and Motor Skills*, *40*, 209-210.

Karlson, Alfred L. & Stodolsky, Susan S. (1973). *Predicting school outcomes from observations of child behavior in classrooms.* Chicago University Early Education Research Center. Paper presented at the annual meeting of the American Educational Research Association, New Orleans, Louisiana. (ERIC Document Reproduction Service No. ED 128 426).

Karnes, Merle B. (1969). *Research and development program on preschool disadvantaged children.* (Contract No. OE 6-10-235). Washington D.C.: U.S. Department of Health Education and Welfare, Office of Education.

Karnes, Merle and Others. (1978). *Immediate, short-term and long-range effects of five preschool programs for disadvantaged children.* Paper presented at the American Educational Research Association annual meeting, Toronto, Canada. (ERIC Document Reproduction Service No. ED 152 043).

Karnes, Merle; Shwedel, Allan; & Williams, Mark. (1983). A comparison of five approaches for educating young children from low-income homes. In *As the twig is bent: lasting effects of preschool programs.* Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Miller, L. (1983a). The Louisville experiment: A comparison of four programs. In The Consortium for Longitudinal Studies (1983). *As the twig is bent...Lasting effects of preschool programs.* pp. 171-199, New Jersey: Lawrence Erlbaum Associates, Publishers.

Miller, Louise B. and Others. (1970a). *Experimental variation of Head Start curricula: A comparison of current approaches (November 1, 1969-January 31, 1970).* (Report No. PR-5). Washington D.C.: Office of Economic Opportunity. (ERIC Document Reproduction Service No. ED 041 617).

Miller, L. & Bizzell, R. (1983b). Long-term effets of four preschool programs: Sixth, seventh, and eighth grades. *Child Development, 54,* 727-41.

Miller, Louise & Dyer, Jean L. (1970b). *Experimental variation of Head Start curricula: A comparison of current approaches. Annual progress report, June 1, 1969-May 31, 1970.* Washington D.C.: Office of Economic Opportunity. (ERIC Document Service No. ED 045 196).

Miller, L. & Dyer, J. (1975). Four preschool programs: Their dimensions and effects. *Monographs of the Society for Research in Child Development. 40(5-6),* 1-170.

Miller, Louise & Dyer, Jean. (1971). *Two kinds of kindergarten after four types of Head Start.* Bethesda, Maryland: National Institute of Child Health and Human Development (NIH), Office of Economic Opportunity. (ERIC Document Reproduction service No. ED 050 824).

Miller, L. & Medley, S. (1984). *Preschool intervention: Fifteen years of research.* Paper presented at the American Psychological Association annual meeting, Toronto, Canada.

Reuter, Jeanette & Yunik, Gladys. (1973). Social interaction in nursery schools. *Developmental Psychology, 9,* 319-325. Reprinted (1974) in *The American Montessori Society Bulletin, 12,* entire issue.

Stodolsky, S. (1970). *Ancona Montessori research project for culturally disadvantaged children. Final Report.* Washington D.C.: Office of Economic Opportunity. (ERIC Document Reproduction Service No. ED 133 066).

Stodolsky, S. (1969a). *Ancona Montessori project for culturally disadvantaged children. September 1, 1968 to August 31, 1969, Final Report.* Washington D.C.: Office of Economic Opportunity. (ERIC Document Reproduction Service No. ED 044 166).

Stodolsky, Susan. (1974). How children find something to do in preschools. *Genetic Psychology Monographs, 90,* 245-303.

Stodolsky, S. S. & Jensen, Judith. (1969b). *Ancona Montessori research project for culturally disadvantaged children. September 1, 1968 to August 31, 1969, Final Report.* Washington D.C.: Office of Economic Opportunity. (ERIC Document Reproduction Service No. ED 044 166).

Stodolsky, S. S. & Karlson, A. L. (1972). Differential outcomes of a Montessori curriculum. *Elementary School Journal, 8,* 419-433.

Stodolsky, Susan & Karlson, Alfred L. (1973). Differential outcomes of a Montessori curriculum. *American Montessori Society Bulletin, 11*(2).

Takacs, Carol & Clifford, Alcillia. (1988). Performance of Montessori graduates in public school classrooms. *The NAMTA Journal, 14*(1), 1-9.

Tatem, F. A. (1977). Prediction of school achievement in preschool Montessori children. (Unpublished doctoral dissertation, State University of New York at Buffalo).

Villegas, Ana Maria. (1989). *Case studies.* Unpublished manuscript. Denver: University of Colorado.

Villegas, Ana Maria. (1988). *The socialization of children in a Montessori classroom.* Unpublished manuscript. Denver: University of Colorado.

EVALUATION

Villegas, Ana Maria & Biwer, Paula. (1987). Parent involvement in a Montessori program: The Denver public school experience. *The NAMTA Journal, 13*(1), 13-24.

Wirtz, Paul. (1976). Social behavior related to material settings in the Montessori preschool environment. (Unpublished doctoral dissertation, George Peabody College for Teachers).

A MONTESSORI APPROACH

EVALUATION

TOWARDS A MONTESSORI EVALUATION APPROACH

by Lakshmi Kripalani

- ***Montessori evaluation seeks to transcend testing and external accountability pressures and involves the child as an effective partner in his or her evaluation.***
- ***In a multi-age group setting, each child is an observer and recorder of the other; the teacher's evaluation is enhanced — through the eyes of the children and their interaction.***
- ***The "control of error" allows the children to evaluate their work and correct their own mistakes. This process of mastery of the materials is mechanical and therefore only part of the evaluation process.***
- ***In order for the teacher to evaluate, he or she must continually verify the learning process which occurs as the child progresses from one material to the next. It is the application of the work by the child that measures the child's real ability. This is implicit in the child's degree of exploration, discovery, generalizing, researching, and ability to apply what he knows.***
- ***The child's ability to present to and correct other children demonstrates a measure of competence, a process that eliminates self-conscious testing.***
- ***Meaningful record keeping does not need to be a detailed checklist, but rather a summary of skills mastered. This is demonstrated by activities completed; knowledge and applications in the advanced activities determined by which activities the child seeks out and completes successfully and with true understanding.***

INTRODUCTION

In an attempt to meet the demands of teacher accountability, educational experts and professionals have presented numerous evaluation approaches. Faced with a multitude of options, school districts demand accountability from experimental programs. It is the teacher who must meet the changing demands for accountability as programs develop. How can the Montessori teacher stay focused on his or her unique educational mission and still meet demands for institutional information and evaluation by standardized tests?

Montessori reminds us that, no matter what direction we take, we have to continually keep the child in focus...the child who has the capacity and the potential to educate him or herself. Without the cooperation and active participation of the child in the evaluative process, teachers will fail to reach their goals. Parents, too, must share in the responsibility. Educators are becoming so reliant on the mechanical information acquired through testing that they fail to look at the child's true formative characteristics.

Montessori educators today are faced with many difficulties, including:

1. How to transcend the narrow limits of testing and to evaluate the intrinsic value of the child's own work;
2. What format to use in record keeping;
3. How to meet school district demands for standardized testing without interfering with Montessori work;

Lakshmi Kripalani is a Montessori teacher, trainer, and consultant based in Montclair, New Jersey. Ms. Kripalani is a first generation Montessorian who trained with Maria Montessori.

4. What to expect from the child who is entering the elementary class; and
5. How to direct the child who hasn't had a Montessori primary experience or the child who lacks exposure to an enriched and complex environment.

THE IMPORTANCE OF EVALUATION

Evaluation is the essence of life. Whatever action we take is an outcome of the process of direct or indirect evaluation that may take place consciously or unconsciously. We evaluate every aspect of our lives. We compare ourselves to our siblings, our friends, our neighbors, our co-workers, our community. Our own personal evaluation makes it possible for us to be secure or insecure and feel good about ourselves or others. Our yardsticks of measurement vary from individual to individual, from group to group, from time to time, culture to culture, and from nation to nation. It is not merely the group or the culture that demands different standards at different stages of development. It is each of us who changes our own standard of evaluation according to the changing times, environment, and personal needs.

The current crisis in education has created a mania for accountability for educators. It is like a mouse trap for all those concerned with education. Parents, politicians, educators, and administrators are going wild in a maze of alternatives for the educational process and for the means that would make the teachers accountable for the children's success. What is forgotten is that children themselves are an essential part of the process of education. It is overwhelming to note that with the approaching twenty-first century, we are still confused by the idea that children are empty capsules to be filled with knowledge that can be poured out on demand to prove if the capsules are empty, half-filled, or full. We have lost sight of the basic issue: that it is the responsibility of all concerned to be equal partners in this process. The educators can function effectively only with the equal partnership and direct participation of the children in the decision-making process. The children have to be aware of why they are being educated, and they have to be actively involved in their own observations and record keeping. In this way, they will share the responsibility for their own success with great pride. Parents must also shoulder the same load of participation.

Let us now examine how we can put into practice the process that will help the educator transcend the narrow limits of merely getting a subject across and then testing the subject content.

When any program becomes, in itself, more important than those it sets out to serve, then that program proves to be worthless. To succeed in the educative process, it is pertinent that we follow an evaluative process that reflects the intrinsic task of the learner; that does not merely respond to those in authority. Evaluation belongs to the teacher, the parents, and most importantly, to the children themselves. If the child does not experience the value of the educative process within him or herself, then any amount of mechanical motivation provided from without will prove to be ineffective.

Let us now examine how we can put into practice the process that will help the educator transcend the narrow limits of merely getting a subject across and then testing the subject content. Montessori said,

> We know how to find pearls in the shells of oysters, gold in the mountains and coal in the bowels of earth, but we are unaware of the spiritual gems, the creative nebulae that the child hides in himself when he enters this world to renew mankind.
>
> *Absorbent Mind*, — translator's
> note — 1958, Claude A. Claremont

Dr. Montessori's vision of the future was not of people taking tests and proceeding on the results of the tests from one grade to another, from primary to the university. She talked about the individual passing from one stage of independence to a higher stage by means of his or her own potential effort and will, which constitutes the inner evolution of the individual *(From Childhood to Adolescence)*.

EVALUATION

EVALUATION THROUGH THE CHILD'S INTERACTION

In a Montessori classroom, the teacher's role is that of a constant observer who records and analyzes details of the work of each child and provides the necessary tools that each child needs at a particular stage of development. This is considered a monumental task for any one individual dealing with a multi-age setting. Yet, paradoxically, it is even more difficult for the teacher dealing with a classroom of children who are all approximately the same age. In a classroom of five year olds, it may be very difficult for the teacher to give individual attention to one child because each individual child demands attention simultaneously. In a mixed-age group where children have learned to work independently, they are enabled to teach each other. The children, so prepared, take on some of the leadership role otherwise provided solely by the teacher.

Homogeneous groups provide fewer chances for development of leadership qualities than do multi-age groupings. Multi-age groups are more likely to provide a rotating leadership, which enables children to learn from each other in a positive way. Generally, children perform better in some areas than they do in others. In a multi-age setting, there is less competition between students since they are used to seeing the uneven development of both older and younger children. Children are more likely to recognize the unique attributes of each individual than are adults. The development of leadership enables the children to teach and to learn from each other.

The teacher's role, then, is to record his or her own evaluation of the progress of each child. This is successful when the observation is clinical and active. Generally, observation is classified as subjective or objective. Subjective observation occurs when the observer interprets the behavior of the observed from his or her personal experience and point of view, which may or may not reflect the true feelings or abilities of the observed. An objective observation is primarily a mechanical recording of activities and events. If no action is taken on the findings, then objective observation is passive; it merely classifies the individuals or behaviors into categories.

Objective observation, however, can be analyzed clinically. Then direct and indirect activities can be provided to help the progress of the individual. This is the meaning of *active clinical observation*. The process of *active clinical observation* starts with parents from the day the child is born and with the teacher from the day the child is interviewed for the primary. Adults utilize this process without being actively conscious of it. Teachers must train themselves to utilize this inborn sensitivity of observation and evaluation in order to be of any help to the children.

EVALUATION THROUGH THE MONTESSORI MATERIALS AND ACTIVITIES

The Montessori educative process is developed so that in many pieces of material and many activities there are built-in controls of error. In the early stages of learning this may be very mechanical, limited to the beginning explorations of the materials by the children. When the children have some experience, they begin to search for their answers and control of error in books, in the dictionary, and finally in the research media available in the libraries. As children learn to utilize a greater variety of materials they become more independent, learning to be self-reliant and capable enough to realize when to seek help from another child, from the teacher, or from an outside source.

The very first sensorial materials that the child handles are the knobbed cylinder blocks. At this stage, the control of error is mechanical. If the child puts a small cylinder in the large cavity, one of the large cylinders will be left out. The teacher does not intervene. Through trial and error, the child succeeds in replacing all the cylinders correctly. This forces the child to look and make judgments. At this stage the child does not become cognitively aware of the differences in the various sizes and shapes. Only after the child has succeeded in replacing the cylinders correctly is the language of dimensions (length, width, height,) given. There are other pieces of material that convey the same concept without boring the child. In the third period of the three period lesson, we find out whether the child can associate a correct object with its correct name. For most teachers, the process stops here and the information is entered on a chart or individual record booklet indicating the child knows the material.

EVALUATION

This, however, is merely a mechanical, passive evaluation, and is parallel to traditional record keeping. However objective it appears to be, it fails to give any depth of information to the teacher or to the child. It does not give information to the authorities or to the parents. Most importantly such an evaluation gives no direction for further exploration, either to the child or the teacher. When the emphasis is solely on the presentation of materials, the principles to be learned are often overlooked. Each item in the Montessori environment should be presented with a clear idea of what learning has preceded this lesson and what principles need to be developed in succeeding lessons. In the example above, the child may give you the correct object or the correct name every time you ask for it. However, this does not prove that the information will be of practical application in another learning situation. In this case, such evaluation is as worthless as our current system of testing has proven to be. Nor does this type of evaluation enhance the teacher's perspective or the child's ability to progress.

If, however, after sufficient work with one set of materials that conveys the same concept, we follow up with games that are progressive in nature and in difficulty, children will be challenged to explore and to discover what other aspects can be perceived and experienced. Exploration and discovery is then followed by questioning, generalizing, and researching. One of the earliest games is to bring from the shelf another cylinder that has the same height or base; later the child is asked to find all the cylinders that have the same base, etc. Once the child catches on to the concept, he or she will continue to explore how many other cylinders have the same height or if there are any other objects in the room of the same height. The teacher's role is to spark the enthusiasm. Children will ignite other children accordingly. When children discover that there are three cylinders that have the smallest base, they may excitedly share the information with others and each one will search to discover other kinds of similarities. This encourages questioning and reasoning, and later on, even generalizing. Caution must be taken by the teacher to let the children do the exploration by themselves and not provide all the information. With enough exploration, the child finds out how one cylinder differs from another and exactly in which block each of the cylinders belongs. The child then may proceed to find other objects in the environment that have the same dimensions for comparison.

Now you can imagine that if this type of exploration is initiated, how much excitement there will be when the children are presented with the colored knobless cylinders. The child who arrives in the elementary class with these experiences is armed with all the tools to acquire further knowledge. The child with this sensorial background is ready to receive lessons which explain the height, area and volume of the cylinder. Because the child has already compared the cylinders for size and shape, he or she is ready now to do comparisons in mathematical terms, e.g., the children may start to find the area of the table by measuring the width and length of the table, or the area of the floor the table occupies. Other computations might be: the area of the distance between the two tables, the total area required to put eight tables two feet apart from each other, how many tables can be put in a room of 500 sq. ft., or how many children can comfortably work in a room of 750 sq. ft. with so much space occupied by the shelves, doors and windows. The difficulty of the practical examples increases as the ability of comprehension and application of mathematical concepts is acquired.

Simple or complex problems such as these can be solved and scored according to the child's ability. This type of scoring helps the child to evaluate his or her own progress. Parallel activities can be easily initiated in other subjects that reflect reasoning, thinking and judging different aspects of life whether in history, geography or science. After the initial introduction, the children acquire the ability to create their own problems in a multi-age grouping. In a cosmic approach to education, it is inevitable that the curriculum broadens and manifests itself in all areas. It is practically beyond the scope of one teacher to encompass everything alone. If the process of creating and solving problems is initiated even with a small number of children, the rest of it proceeds spontaneously. The children thus direct, create and maintain the record of their own progress and achievement through journal writing. *The teacher's role, then, truly becomes that of a director who observes and initiates new challenges according to the potentiality of each child and guides those in need. Most of the guidance comes from the experienced children who help the younger ones.* The cumulative journal thus maintained can then be easily transformed into some type of scoring system that supersedes onetime mechanical testing. Caution has to be taken by the teacher that these problems are progressive in nature as the children mature in their ability to think and solve problems.

A MONTESSORI APPROACH

EVALUATION

These experiences are not out of the ordinary. The only caution to be taken is to initiate the right activity at the right moment and at the right stage of the development of the child. It is through active observation of each child, along with the teacher's understanding of child development, that the teacher knows the appropriate timing for the introduction of new materials.

Exercises in guided discovery not only enhance knowledge, but this type of experience is never forgotten. Further, children who have already experienced exploration are ready to introduce activities to younger children who arrive later. When children are graduated to elementary classes, they have mastered the knowledge to such an extent that they can help new students who arrive without primary experience. Because of this sharing of information among peers, the number of new children in proportion to those with experience has to be controlled. Otherwise there will be an imbalance for the children as well as for the teacher.

Record keeping of the above activities provides clinical analysis of the child's progress and comprehension of the concepts thus experienced. The teacher knows that the child has not merely mastered the activity, but can judge the extent to which he or she is ready to transmit the knowledge to another child and is able to work within a particular group; generalized remarks, combined with the child's portfolio, will give a true picture of the child's progress. It will also satisfactorily fulfill the need for accountability.

The teacher does not need tedious and boring forms to mark down each activity that the child touches such as phonogram *ch*, phonogram *sh*, and *ph*, *cl*, *gh*, *th*,...to infinity. What we need is the summary of the achievement in general terms, such as, "the child has mastered the ability of recognizing and taking dictation of words with almost all the combinations of phonograms." If the class is functioning with all the variations of the above activities, the results and the continuous record kept by the children and the teacher will reflect each child's involvement and progress in the class. The enthusiasm of children researching from books and libraries on their own time, and their interest in solving quizzes, puzzles, problems, etc., will indicate the progress of the learning that is taking place.

The difference between the preschool and the elementary class in student evaluations is that, early in the preschool class, the evaluation starts with games that reflect the assimilation of concepts and simple problem solving and relevant questions that involve thinking. In the elementary classes, the evaluation continues to be reflected through problem solving that enhances the thinking process combined with the research activities and written work portfolios of each child. The data acquired from the cumulative progress record, as referred to earlier, can be summarized by the teacher during weekly or bi-weekly conferences to enable the child to be aware of his or her progress and shortcomings. This not only enables the teacher to continuously evaluate a child's progress, but the child becomes master of his or her own progress and proceeds confidently to cross over the hurdles without being trapped in the concept of failure.

It is the teacher's role to give generalized problems as necessary, to classify the levels of difficulty, to vary the format, and to make them meaningful at all times. Variety eliminates the potential for mechanical, boring work. Relating math to practical life situations at home and at work will promote challenge and curiosity for progress.

The simple example given above was chosen to demonstrate the process of evaluation by the teacher that commences from the moment the child enters the class. Using careful, analytical observation that is clinically active at all times, the teacher has a living description of the child's progress. The example illustrated starts with a very early sensorial experience of the cylinder blocks and progresses to abstract mathematical experiences. Further, it clarifies the direct as well as the indirect acquisition of meaningful knowledge that can be evaluated in concrete ways. Parallel concepts follow in the language area: simple phonetic three-letter words, phonograms and sentences, grammar, sentence analysis, and synthesis of sentences. Language continues with simple reading and writing to dramatic reading and comprehension. This same basic principle is followed in history, geography, and sciences.

EVALUATION

STANDARDIZED TESTS

A survey of private Montessori schools reveals that in most cases the Montessori program is carried on as usual. At the end of the year, the children are introduced to tests. They either take the state required tests, *California Test of Basic Skills, Iowa Achievement Test*, or *Standford Achievement Test*. Test taking techniques are not usually taught. The majority of the private Montessori schools surveyed reported that their children tested better than the local public school children (Kripalani, 1989).

At present, we must continue to enhance our understanding and application of techniques of Montessori philosophy and education. We must answer the demand for accountability and satisfy the authorities, despite the fact that results of their tests may not reflect an accurate evaluation of our work. At the same time, we must be on guard that we communicate what is uniquely Montessori, assess our goals, and maintain our standards in order to achieve these goals. If the Montessori approach is put into practice, then all we need is to introduce the idea of testing to the children. The rest will fall into place. We do not need to "teach to the test." We do, however, need to teach the kind of thinking process objective tests require and how to respond to objective test items: otherwise the children are at a disadvantage.

When the children share the responsibility of education and evaluation, the teacher will experience the joy of directing the process and will be less likely to be overtaxed by the end of the day or burned out by the end of the year.

READINGS

ASCD Publication — Teacher Evaluation — 1988
Educational Leadership — Redirectoring Assessment — Vol. 46, No. 1 — April 1989
Dr. Maria Montessori — *Secret of Childhood*
Dr. Maria Montessori — *Absorbent Mind*
Dr. Maria Montessori — *Formation of Man*
Dr. Maria Montessori — *From Childhood to Adolescence*
Lakshmi Kripalani — Observation — AMI Communications — 1987 — 1
Lakshmi Kripalani — Human Tendencies — AMI Communication 1988 — 1
Lakshmi Kripalani — Evaluation vs. Tests — NAMTA — Fall 1989
George Weber — Uses and Abuses of Standardized Testing in Schools — Occasional Papers No. 22 — 1974

BEST COPY AVAILABLE

BEST COPY AVAILABLE